JANUARY 1997

Asimov's SCIENCE FICTION

WPS 36009

Hunt a killer in space!

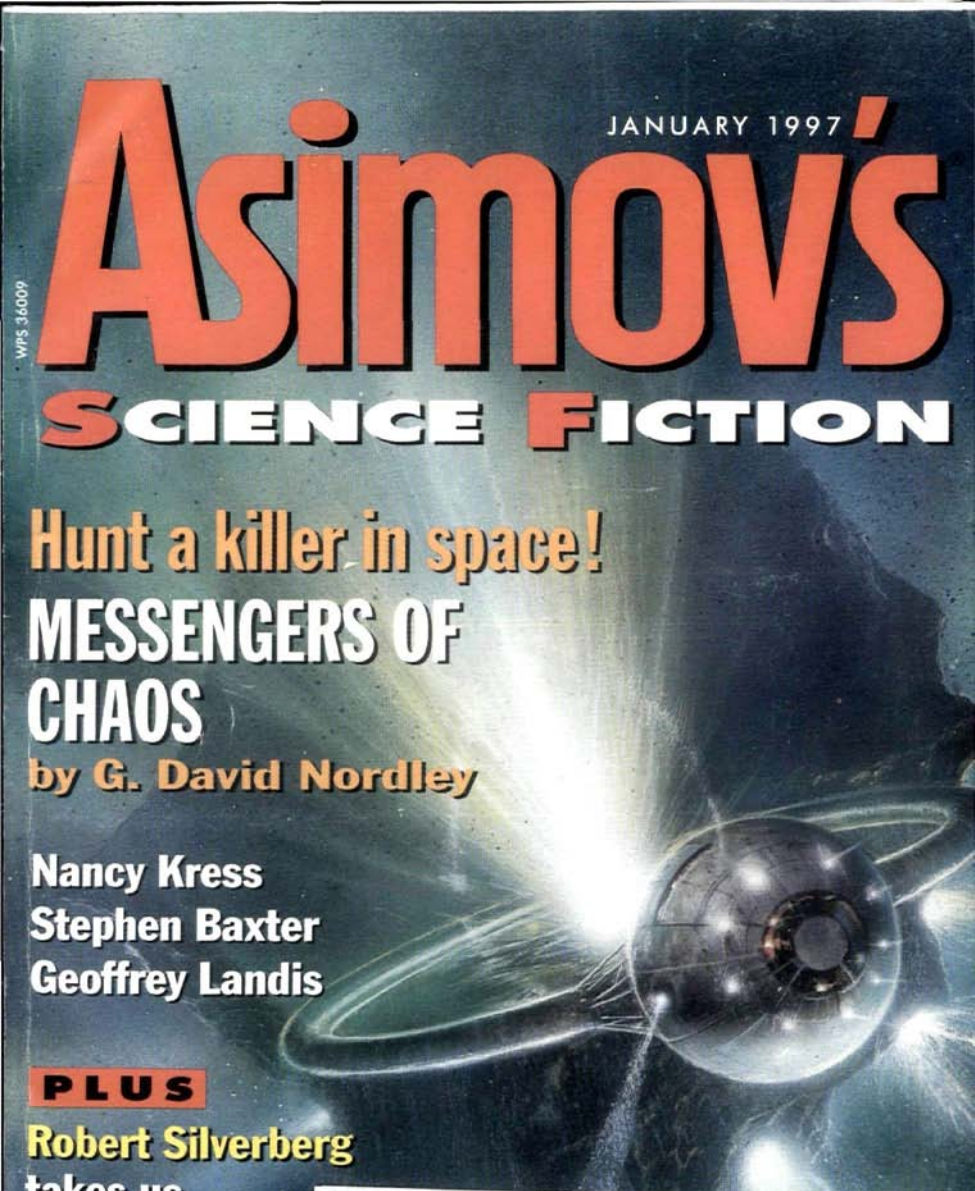
MESSENGERS OF CHAOS

by G. David Nordley

Nancy Kress
Stephen Baxter
Geoffrey Landis

PLUS

Robert Silverberg takes us Six Trillion Miles High



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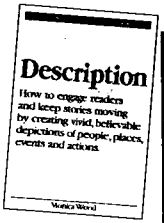
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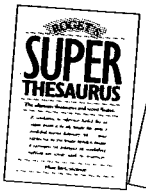

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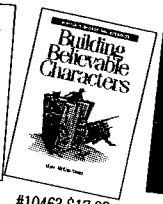

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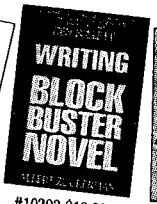

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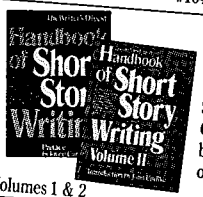

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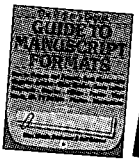

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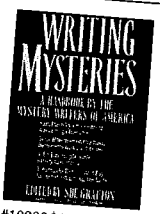

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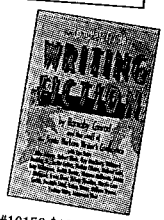

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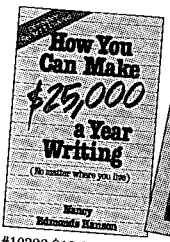

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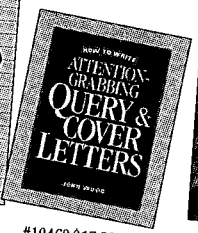

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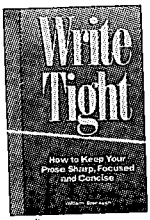

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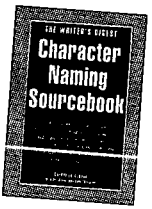

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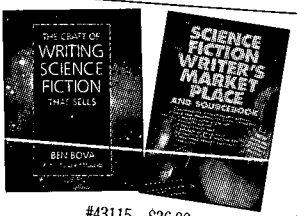

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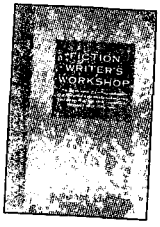

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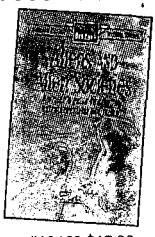
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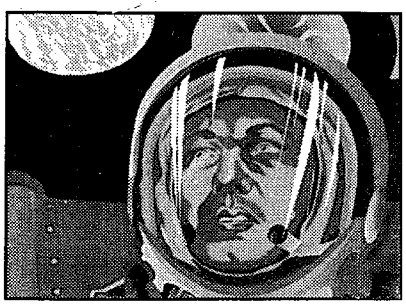

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Stories from *Asimov's* have won twenty-four Hugos and twenty-two Nebula Awards, and our editors have received ten Hugo Awards for Best Editor. *Asimov's* was also the 1995 recipient of the Locus Award for Best Magazine.

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REFLECTIONS

by Robert Silverberg

SIX TRILLION MILES HIGH

I'm looking at the most awesome photograph I've ever seen—or expect to see. It may well be the most extraordinary picture in the entire history of photography.

It's a dazzling color photo (in the San Francisco *Chronicle*, at any rate; the more conservative New York *Times,* which I, as an expatriate New Yorker, continue to read out here in California, ran it in prosaic black and white). The picture shows three craggy-looking pillar-shaped objects of differing sizes. The left-hand one, which is the tallest, reminds me of the upright growths I used to see occasionally while snorkeling around coral reefs in the West Indies, or perhaps of a stalagmite sprouting from a cavern floor. The middle object, smaller and simpler in form, is somewhat phallic. The small one on the right has an irregular, nondescript two-pronged shape. They are shown against a background of blue sky (at least in the San Francisco paper) with some twinkling stars in view behind them. Fluffy masses of bright light can be seen around the tops of all three of the vertical objects.

The three pillars, although they look like gnarly outcroppings of rock, are in fact dark clouds of gas out of which three new stars, eight or ten times as massive as our own sun, have just formed. The swirls of fluffy brightness looking like so much cotton candy that we see at the tips of those three pillar-shaped objects are actually the emanations of the newly born stars, which are in the Eagle Nebula, M16 in the constellation known as Serpens, seven thousand light-years distant from Earth.

Those three craggy upright objects in the photograph are each about *six trillion miles high.* If one end of the smallest of them were to be attached to our sun, the other end would jut out into space well beyond the orbit of Pluto. Yet there are all three of them in a single snapshot, covering perhaps fifty square inches of the front page of my daily newspaper. That one lovely image provides us a privileged look at the act of stellar birth.

Now do you see why I think it's the most awesome photograph ever taken?

The orbiting Hubble Space Telescope snapped it in April 1995. NASA released it about six months later, along with others showing some fifty new stars in varying stages of development. I don't know which aspect of the picture I find most astonishing: that the pretty swirls of bright fluffiness at

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the ends of the long columnar structures are in reality gigantic stars seen in the moment of their coming into being, or that we are peering back seven thousand years in time to watch those stars being born, or that the three columns themselves, hardly longer than my fingers in the photograph, are colossi of unimaginable size. (What does "six trillion miles" mean to us, really, except "very very big"?)

I suppose it's the compression of six-trillion-mile long objects into a single photograph that stirred the most immediate surge of wonderment in me when I opened the newspaper that morning. But on some reflection I realized that what astonished me most was that the picture had been taken at all—done at the behest of ordinary mortals right here on Earth in the year 1995. That's only some one hundred sixty years since Michael Faraday discovered the principles of the electric dynamo, one hundred and one years since Guglielmo Marconi managed to send radio signals across a distance as great as a mile and a half, ninety-two years since Orville and Wilbur Wright made their first wobbly little airplane flight at Kitty Hawk. And just thirty-eight years since human beings succeeded in launching the first artificial space satellite—the Soviet Union's tiny Sputnik I. Whatever its other flaws may be, a species that can manage to traverse a course in less than two centuries that carries it from its first uncertain generation of electricity and its earliest crude ex-

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periments with flight to the taking of pictures (from a camera parked in space) of the birth process of stars seven thousand light-years away has to be regarded as a non-trivial kind of species. We make a lot of messes on this planet, but we are an intelligent life-form even so.

The particular life-form who brought these flabbergasting photos into being was Dr. Jeff Hester, an astronomer at Arizona State University, who worked in association with Paul Scowen, a postdoctoral fellow there. At the time of the pictures' release Dr. Hester explained that what we are looking at in them is a group of immense and relatively dense clouds of hydrogen gas. (In the photographs they seem like solid rock outcroppings, or perhaps like great thunderheads against the sky, but in actuality they are dense only in comparison with the virtual vacuum about them; their thickest portions, according to Dr. Hester, are less than a trillionth as dense as the atmosphere of Earth.) These clouds are undergoing bombardment by intense ultraviolet radiation coming from big stars in their vicinity. This radiation is causing the gas that makes up the huge pillars to boil away, a process that exposes even denser masses of gas within the column.

It is within these inner masses that the genesis of stars takes place. Dr. Hester likens the erosive effect of the ultraviolet radiation to that caused by high winds scouring across a desert, sweeping away sand and laying bare the boulders that had been buried within it. The hidden globules of dense gaseous matter have already begun to collapse of their own weight, setting into operation the process of star formation. As these globules begin to stand out as a result of the impact of the ultraviolet radiation, and then themselves start to evaporate, the nascent stars inside them are gradually revealed.

"In some ways it seems more like archaeology than astronomy," Dr. Hester says. "The ultraviolet light from nearby stars does the digging for us, and we study what is unearthed." Hester, who can be dazzlingly quick to shift metaphors, tells us that the globule at the stage when the newborn star first becomes visible "looks something like an ice cream cone, with a newly uncovered star playing the role of the cherry on top."

After a time, the dense globules are connected to the mother cloud by nothing more than thin bridges of gas, and the young stars can be seen at the ends of stalks protruding from the cloud masses that spawned them. As the evaporative process continues, the new stars eventually become completely isolated from the surrounding gas clouds, and the clouds themselves ultimately evaporate altogether. (Hester could not resist giving the star-generating cloud globules the name of EGGs, "evaporating gas globules.")

This is not the only process by which stars are born, nor the only one that the orbiting Hubble telescope has photographed since its

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The Diamond Age
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"Think Like a Dinosaur"
by James Patrick Kelly
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Science Fiction, the Illustrated Encyclopedia
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Gardner Dozois

Best Dramatic Presentation
"The Coming of the Shadows"
Babylon 5

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launching in 1990. The evaporative effect caused by the ultraviolet output of the neighboring stars is hastening the emergence of the Eagle Nebula stars from their cloud matrix, so that it is unlikely that planets will form around them. Elsewhere, where the ultraviolet factor is not present, newborn stars remain in their formative cloud masses a much longer time, continuing to grow until their own radiation and other dynamic processes free them from the surrounding gas.

The 94-inch Hubble, which began its career in space under something of a cloud itself (after having been put in orbit, it needed a tweaking by shuttle-borne astronauts to correct a focusing problem) promises to inundate us with wonders in the remaining ten or twenty years of its probable time in orbit. A few months after the flabbergasting Serpens photographs came the even more flabbergasting announcement at the American Astronomical Association convention in San Antonio, Texas, that the Hubble, when aimed over a twelve-day period in December 1995 at a remote part of space that through ground-based telescopes appears to be almost devoid of stars, had discovered no less than 1,500 young galaxies out there. Not stars, but *galaxies*. (Millions of stars, that is . . . possibly a whole slew of planets. The whole starry panorama that you see in the skies at night represents just *one* galaxy, the local one that we call the Milky Way, and not all of it at that.) The conclusion was that if this supposedly empty corner of space is crammed with previously unknown galaxies, then the universe must be far more crowded than we have until now believed it to be.

So crowded, in fact, that instead of there being a mere ten billion galaxies in the universe, astronomers now think that there may be *fifty* billion. One click of the Hubble's cute little shutter and forty billion galaxies, with Isaac only knows how many stars and planets in them (and—dare we say it?—planets bearing intelligent life), have been added to our cosmos overnight.

Forty billion previously unsuspected galaxies. . . .

Clouds of dust six trillion miles high. . . .

Photographs of clouds of dust six trillion miles high in the newspaper. . . .

Things aren't perfect on our little planet these days. We have a vanishing ozone layer, nasty little wars happening in too many places, people going hungry, et cetera, et cetera. There's lots of room for improvement. But it's an age of wonders, all the same. Never let anybody tell you otherwise. We are flawed entities, yes; but we are not all that contemptible a species if we can manage to poke our little cameras into the cradles of the stars and at galaxies fifteen billion light-years away. ●

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LETTERS

To whom it may concern,

I wrote to you in October about trying to locate the book *Adventures in Time and Space* edited by Raymond J. Healy and J. Francis McComas that was recommended by Robert Silverberg in an earlier issue of *Asimov's*. The Science Fiction Book Club suggested I write to Peninsula Booksearch at P.O. Box 1305, Burlingame, CA 94011-1305. Peninsula Booksearch located a copy of the book for me and now I am one happy SF reader! You might want to pass this information along to any other readers who are trying to locate this book or any other hard-to-find books.

Sincerely,

Renelle Sunshine
Orlando, FL

Dear Ms. Charnas,

I just finished reading your novelette "Beauty and the Opéra . . ." (March 1996) and enjoyed it very much. Thank you for not shying away from the darker side.

Carrie Hernandez
Grenada Hills, CA
(a fellow PAS member)

Dear Editor,

Robert Silverberg's columns as well as the letters section of your magazine often have an overt or less overt undercurrent, that if science fiction were like "the old days," it would attract a larger, younger, more idealistic readership than it currently does. Like most who write to the editor, I've subscribed to *Asimov's* since issue #2 (still in a box in my attic). When I look back on the issues I see great fiction in nearly nineteen years of reading *Asimov's*. My favorite story is "Mother Goddess of the World" by Kim Stanley Robinson (October 1987). Though I've enjoyed countless stories, I wouldn't want to go back to the same kind of story over and over again. The magazine has evolved. The stories have evolved. I have evolved. I want different science fiction now than nineteen years ago.

I have read the authors of the "Golden Age of Science Fiction" and retain, to my wife's disdain, too many books on my shelves. Going back and writing stories in a style that was popular thirty, forty, fifty, and sixty years ago is ridiculous. It won't sell. Let's not go back. *My Favorite Martian* and *Leave It to Beaver* were good TV shows in their day, but would never cut it today. By going back, I doubt we will attract more readership—more likely, we would be labeled anachronistic.

Science fiction is, has, and always will evolve. The future sci-

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ence fiction will be different from today's, just as today's science fiction is different from twenty, or sixty years ago. I can hardly wait, because I'm sure it will be entertaining. *Asimov's*, continue doing the fabulous job of printing that evolving science fiction so I can continue to be entertained. Too much of one thing is boring. Hopefully nineteen years from now I will still be enjoying *Asimov's*.
Sincerely,

Dr. Alain Kolt
Morden, MB
Canada

I don't say that current writers should imitate the styles of Asimov, Heinlein, Bester, Sturgeon, and the other Golden Age greats, or that they should spend their days reworking their themes. Of course *science fiction, which directly reflects changes in science and society, needs constantly to evolve. But I do think those great SF writers of the past still have something to say to today's readers and it's important to keep their work available. Homer wrote* The Iliad *almost three thousand years ago. Shakespeare turned out* Hamlet *and* Lear *in the seventeenth century. Hemingway's* The Sun Also Rises *was published in 1926. People still read all of them with pleasure. Is it only science fiction that has such a short shelf life, then?*

—Robert Silverberg

Dear Mr: Silverberg,

Your moving elegy to John Brunner ("Reflections," March 1996) continues to haunt me. As a collegiate English teacher, I've been fortunate to offer courses in science fiction literature, and I've used Brunner's work in my courses, particularly *Stand on Zanzibar*. During the late sixties and early seventies, Brunner did indeed seem to be far ahead of his time as a writer, in both content and style. But it seems that a strange curse lies over writers of that era. So many of them lost control of themselves, their talent or both. (I'm thinking here of Samuel Delany, Philip K. Dick, and Walter Miller among others.)

Yes, Brunner's death was tragic. It was tragic in a way that ennobles life, a way that the rest of us admire but would not want to imitate. I don't think I have the strength to be as weak as he was. And as I look over the current generation of writers, a group I have some modest aspiration of joining someday, I can't help but wonder who was born under a fortunate star, and who under a comet.
Sincerely,

Jeff Verona
Ft. Worth, TX

Dear Sheila and Gardner,

I have just finished Suzy McKee Charnas's novelette, "Beauty and the Opéra or the Phantom Beast," and I found it to be incredibly powerful and moving, and not at all even remotely related to science fiction. One of the things I like best about *Asimov's* is your willingness to print a great story even if it can't be pigeonholed into "SF" or

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"fantasy" or any of the neat little parcels into which bookstores are divided. I never know which direction a story will take, but finding out is always rewarding.

When the Good Doctor passed away, I was a little worried that the quality of the magazine might suffer (along with the rest of us!), but it just keeps getting better and better. Thank you.

Gail Reed
Chicago, IL

Dear Editors,

I am now on my second year of subscription to *Asimov's* (but I have been reading science fiction since I was eleven—eight years), and I want to thank you for filling it with such wonderful SF. My hobby is reading science fiction, but during the school year I have almost no free time to enjoy a book. Every month when the magazine arrives, I put off all my work and sit down and read for a day.

If I didn't have this chance to stimulate my mind, I'd go insane from boredom here at school!! I am studying computer science with the intent of going into the field of artificial intelligence. Every time I pick up *Asimov's* I get excited about the possibilities. If I didn't get this monthly reminder, I would probably get sucked in by the mundane activities of everyday life and forget how to dream!

Thank you for keeping me alive!!!
Sincerely yours,

Joanna Scaparotti
Lowell, MA
jscaparo@cs.uml.edu

Dear Editors,

I didn't expect the March 1996 issue of *Asimov's* to break my heart. To learn that Roger Zelazny and John Brunner had both stopped writing forever—far too soon—was a terrible shock. I loved Zelazny's poetry with an intensity equal to that of the writing. I didn't just admire Brunner's *Stand on Zanzibar,* I was awestruck by it.

In *Lord of Light,* Sam's followers commit the great sin of calling him back from Nirvana because he is desperately needed in the world of the living. If only we readers could do the same for the authors! Both of them helped throw the doors of science fiction wide to great writing.

Then, in the April issue, you came up with the funniest satire I have ever read—by Connie Willis, of course. Since it's really not science fiction, and not a story either, you're going to have to create an entirely new category for it in the next Readers' Poll so it can get the award it deserves.
Sincerely,

Gail Everett
Portland, ME

Dear Mr. Silverberg,

Having just received and started to read the March issue of *Asimov's,* I was at once struck by the passing of both Roger Zelazny and John Brunner, as well as the appropriateness of where I heard of the deaths: *Asimov's Science Fiction* magazine.

I was quite taken with John Brunner's *Stand on Zanzibar* and *The Sheep Look Up,* and had spent

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a few years—in vain—attempting to find good-quality hard-covers of them (prior to that, I'd only found tatty old paperback versions).

I was also attracted by Roger Zelazny's Amber series, thinking at one time how it would make a terrific, though outrageously expensive, film. The frustration of that series was never knowing which book fell in which order. A situation not rectified with the publication of the second Amber series, which, to my knowledge, still isn't complete.

What I found most disturbing, upon reading and thinking about what you'd written of these two men, is that neither one of them merited mention in the news, as the passing of Isaac Asimov was, several years ago.

I was still working in Vancouver at the time, making the daily drive into New Westminster, when I heard that Isaac had died. If I had been capable of tears at the time, I would've shed a few; Isaac Asimov was the author whose words gave me the passion to write. I felt—as a ten-year-old(?)—that if I could write as well as he could, I'd have some hope of being good. Any man that can write a book for adults—the *Foundation* trilogy (as it was at the time)—that was so enjoyable to a child had to have a gift.

Near the beginning of your piece, you said how their deaths reminded you of your own mortality. While I have yet to have that experience, I had a moment of my own that I thought I'd share: Part of my emotional recovery—I am a new childlike adult (a recovered adult-child), one who had shut away emotions as a survival mechanism—was to tell the people that were important to me that they were important to me. In effect, this is really for everyone: how often do we tell those we love that we love them? Or that we respect an ability or gift they have?

I am reminded of the dedication that Harlan Ellison wrote in the beginning of his collection *Angry Candy*: "If we'd known the pain of missing you would be so great, we'd have told you how much we loved you more often."

I thought of how often I'd read a terrific book by an author I either knew well, or didn't know at all, and the most I'd do is hunt the book down and buy a copy. That tells the author something: that the book is selling well.

To send a letter telling the author directly what I think of the book: how it touched me; what I learned from it; how exciting the ideas were; and so on, would go a lot further because of the personal contact.

Since I started my subscription to *Asimov's*, I've read some terrific stories, some not-so-terrific, and some that left me rather baffled. I really enjoyed your story "Hot Times in Magma City." It proves again that in California, *anything* can happen.

Yet I've not sent in any reader's comments yet. I haven't given the writers any feedback.

Before I met Harlan Ellison, his were just words on a page. Though damned fine words, many of which have influenced me a great deal,

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they were somehow disconnected from a real person. My all-too-brief meeting, at an Evening with Harlan Ellison in Vancouver some years ago, had me as awe-struck as if I'd just met a legendary and well-respected actor.

He's no longer a name on a page, and I'm now making the effort to communicate with the authors whose work has entertained me so often.

Thank you.
Regards,

Roger Brown
Gibsons, BC
Canada

Hello there!

I would like to tell you, that Connie Willis's essay in your April issue is one of the best things I've read lately (okay, I haven't had enough time to spend reading but anyway).

Give the author my best regards, and wishes for a successful tenure! I believe that Welles and Wells would both be (are both, will both be, were both) proud of her.

Keep on doing what you are!
Regards,

B. Peytchev
Madison, WI

Dear *Asimov's*,

Connie Willis is hilarious! Her story spoofing Emily Dickinson's writings and the folly of writing a doctoral thesis made me laugh out loud while reading. Is there any limit to Willis's incredible talent?

Philip Nolen
Orlando, FL

Dear Connie Willis,

Thank you very much for your recent "The Soul Selects Her Own Society." (I do not give the whole title as I wish to leave room for the rest of this letter.) I cannot recall reading anything of yours that I did not enjoy greatly. Your stories take a while to read however. I have a subscription to *Asimov's* in Braille, and whenever your name appears in an issue, I read the piece aloud to my wife Lenore. This requires me to stop frequently in order to engage in hysterical laughter—I am careful to keep food well away from myself at these times, since once I nearly choked to death on my tea!

Since my background was originally in engineering and journalism, I doubtless spent less time than I might have learning the subtleties of nineteenth-century literature and poetry. You clarified many matters that had niggled surely, but of solutions to which, I was alone incapable. This piece was therefore, both instructive and edifying to me (and Lenore, who is herself a poet), and we feel that your analyses make perfect sense!

May you have a wonderful life.
Sincerely,

Dave Plassman
Bellington, WA

EDITORS' NOTE:

Bruce Boston's poem, "Future Present: A Lesson in Expectation" (March 1995), has won the Rhysling Award for Best Short Speculative Poem. It will be reprinted in Nebula Awards 32.

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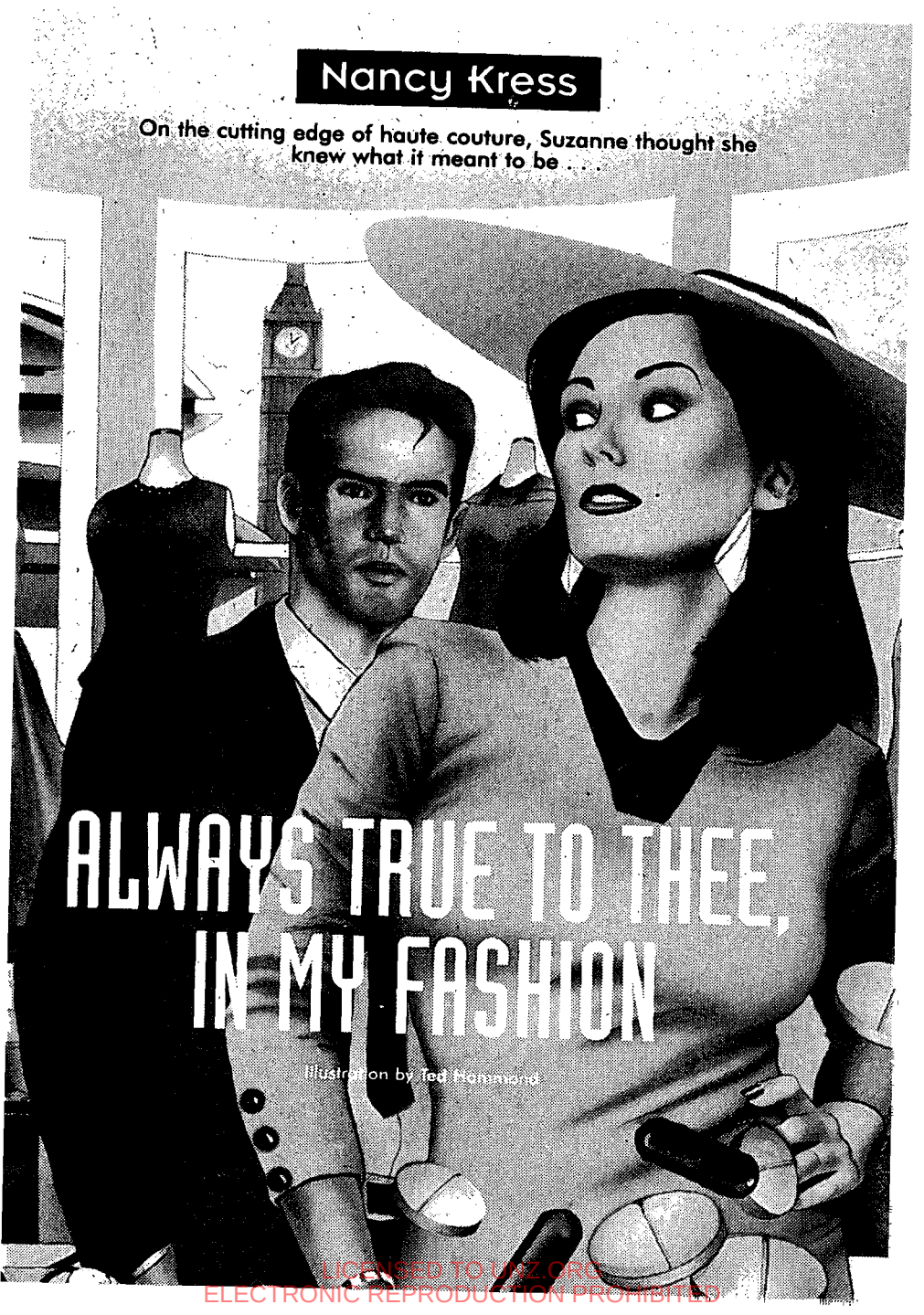
Nancy Kress

On the cutting edge of haute couture, Suzanne thought she knew what it meant to be . . .



ALWAYS TRUE TO THEE, IN MY FASHION

Illustration by Ted Hammond

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Relationships for the autumn season were casual and unconstructed, following a summer where fashion had been unusually colorful and intense. Suzanne liked wearing the new feelings. They were light and cool, allowing her a lot of freedom of movement. The off-hand affection made her feel unencumbered, graceful.

Cade wasn't so sure.

"It sounds bloody boring," he said to Suzanne, holding the pills in his hand. "Love isn't supposed to be so boring. At least the summer fashions offered a few surprises."

Boxes from the couture houses spilled around their bedroom. Suzanne, of course, had done the ordering. Karl Lagerfeld, Galliano, Enkia for Christian LaCroix, and of course Suzanne's own special designer and friend, Sendil. Cade stood in the middle of an explosion of slouchy tweeds and off-white linen, wearing his underwear and his stubborn look.

"But the summer feelings were so heavy," Suzanne said. She dropped a casual kiss on the top of Cade's head. "Come on, Cadie, at least give it a try. You have the body for casual emotions, you know. They look so good on you."

This was true. Cade was lean and loose-jointed, with a small head on a long neck: a body made for easy carelessness. Backlit by their wide bedroom windows, he already looked coolly nonchalant: an Edwardian aristocrat, perhaps, or one of those marvelously blasé American riverboat gamblers who couldn't be bothered to sweat. The environment helped, of course. Suzanne always did their V-R, and for autumn she'd programmed unlined curtains, cool terra cotta tiles, oyster-white walls. All very informal and composed, nothing trying very hard. But she'd left the windows natural. That, too, was perfect: too nonchalant about the view of London to bother reprogramming its ugliness. Only Suzanne would have thought of this touch. Their friends would be so jealous.

"Come on, Cade, try the feelings on." But he only went on looking troubled, holding the pills in his long-fingered hand.

Suzanne began to feel impatient. Cade was wonderful, of course, but he could be so conservative. He really hadn't liked the summer fashions—and they had been so much fun! Suzanne knew she looked good in those kinds of dramatic, highly colored feelings. They went well with her voluptuous body and small, sharp teeth. People had noticed. She'd had two passionate adulteries, one knife-fight with Kittery, one duel fought over her, two midnight reconciliations, and one weepy parting from Cade at sunset on the edge of a sea, which had been V-R'd into wine-dark roils for the occasion. Very satisfying.

But the summer was over. Really, Cade should be more willing to vary his emotional wardrobe. Sometimes she even wondered if she might be better off with another lover . . . Mikhail, maybe, or even Jastinder . . . but no, of course not. She loved Cade. They belonged to

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each other forever. Cade was the bedrock of her life. If only he weren't so stubborn!

"Have you ever thought," he said, not looking at her, "that we might skip a fashion season? Just let it go by and wear something old, off alone together? Or even go naked?"

"What an idea," she said lightly.

"We could try it, Suzanne."

"We could also move out of the towers and live down there along the Thames among the starving and dirty-mattressed thugs. Equally appealing."

Wrong, wrong. Cade turned away from her. In another minute he would put the pills back in their little bottle. Suzanne decided to try playfulness. She twined her arms around his neck, and flashed her eyes at him. "You are vast, Cade. You contain multitudes. Do you really think it's fair, mmmm, that you deny me all your multitudes, when I'm so ready to love them all?"

Reluctantly, he smiled. " 'Multitudes,' is it?"

"And I *want* them all. All the Cades. I'm greedy, you know." She rubbed against him.

"Well. . . ."

"Come on, Cade. For me." Another rub, and after it she danced away, laughing.

He could never resist her. He swallowed the pills, then reached out his arms. Suzanne eluded them.

"Not yet. After they take effect."

"Suzanne . . ."

"Tomorrow." Casually, she blew him an affectionate kiss and sauntered toward the door, leaving him gazing after her. Cade wanting her, and she off-hand and insouciant.

It was going to be a wonderful autumn.

The next day was unbelievably exciting, more arousing even than when she'd walked in on Cade and Kittery in the summer bedroom and they'd had the shouting and pleading and knife fight. This was arousing in a different way. Suzanne had strolled into the apartment in mid-morning, half an hour late. "There you are, then," she'd said casually to Cade.

He looked up from his reader, his long-limbed body sprawled across the chair. "Oh, hallo."

"How are you?"

He shrugged, then made a negligent gesture with one graceful slim-fingered hand.

Suzanne draped herself across his lap, gazing abstractedly out the window. Today London looked even uglier than usual: cold, gray, dirty.

"Do you mind awfully?" Cade said. "I'm in the middle of this article."

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"And so absorbed that you don't notice me, mmmmm?" Suzanne moved against him.

Cade smiled, pecked her cheek, and gave her a careless nudge. "Off you go, then." He returned to his reader. Suzanne stood and stretched.

The rush of blood to her nipples and thighs startled her. He really was indifferent to her! She would have to actually work at getting him interested, winning him from his casual reading . . . God, it was exciting!

She would succeed, of course. She always did. But why hadn't she ever realized before how much more interesting the victory was when she'd have to struggle for it? She hadn't been this aroused in years.

"Cade . . ." She leaned over him and nibbled on his ear. "Sweet Cade . . ."

He tilted his head to look up at her, eyebrows raised. The drugs had done something to his eyes, or to her perception of them; they looked lighter, more opaque. Suzanne laughed softly. "Come on, it will be so good. . . ."

"Oh, all right. If you insist."

He rose from his chair, turned to pick up the dropped reader. He nudged an antique vase a quarter inch to the right on one of Sendil's occasional tables. He rubbed his left elbow, gazing out the window. Suzanne took his hand, and they ambled toward the bedroom.

And it was wonderful. The most interesting show in years. Really, the fashion designers were geniuses.

"Cade, Flavia and Mikhail have invited us to a water fete on Saturday. Do you want to go?"

He looked up from his screen, where he was checking his portfolio on the New York Stock Exchange. He didn't even look annoyed that she'd interrupted. "Do you want to go?"

"I asked *you*."

"I don't care."

Suzanne bit her lip. "Well, what shall I tell Flavia?"

"Whatever you like, love."

"Well, then . . . I thought I might fly to Paris this weekend." She paused. "To see Guillaume."

He didn't even twitch. "Whatever you like, love."

"Cade—do you care if I visit Guillaume? For an entire weekend?" In the summer, a threat to visit Guillaume, a former lover who still adored Suzanne, had produced drama that went on for sixteen straight hours.

"Oh, Suzanne, don't be tiresome. Of course you can visit Guillaume if you want." Cade blew her a casual kiss.

She charged across the room, seized his hand, and dragged him away from the terminal. His eyebrows rose slightly.

But afterward, as Cade lay deeply asleep, Suzanne wondered. Maybe he'd actually been right, after all, about the current fashions. Not that it

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hadn't been exciting to work at arousing him, but . . . she wasn't supposed to be working. She was supposed to feel just as detached and casual as Cade. That was the bloody trouble with fashion—no matter what the designers said, one size never did fit all. The individual drug responses were too different. Well, no matter. Tomorrow she'd just increase her dosage. Until she, and not Cade, was the more casual. The sought after, rather than the seeker.

The way it was supposed to be.

"Cade . . . Cade?"

"Oh, Suzanne. Do come in."

He sat up in bed, unselfconscious, unruffled. Beside him, Flavia emerged languidly from the off-white sheets. She said, "Suzanne, darling. I *am* sorry. We didn't expect you so soon. Shall I leave?"

Suzanne crossed the room to the dresser. This was more like it. A little movement, for a change—a little *action*. Really, casual was all very well, but how many evenings could one spend in off-hand conversation? Almost she was grateful to Flavia. Not that she would show it, of course. But Flavia was giving her the perfect excuse to put on an entirely different demeanor. She had rather missed changing for dinner.

From the dresser top she picked up a string of pearls and toyed with them, a careful appearance of anger suppressed under a façade of sophisticated control. "Cade . . . how could you?"

Flavia said, "Perhaps I *had* better leave, hadn't I? See you later, darlings." She activated a V-R dress from her necklace—easy unconstricting lines in a subtle taupe, Suzanne noted—and left.

Cade said, "Suzanne—"

"I trusted you, Cade!"

"Oh, rot," he said. "You're making a fuss over nothing."

"Nothing! You call—"

"Really, Suzanne. Flavia hardly matters."

" 'Hardly'? And just what does that mean?"

"Oh, Suzanne, you know what it means. Really, don't make yourself ridiculous over trifles." And Cade yawned, stretched, and went to sleep.

To sleep.

Suzanne thought of waking him. She thought of pounding on him with her small fists, of dumping him on the floor, of packing her bags and leaving a note. But, really, all those things *would* look rather ridiculous. People would hear about it, snicker . . . and even if they didn't, even if Cade kept her bad taste to himself, there was still the fact that the two of them would know it had happened. Suzanne had lost her cool poise. She had been as embarrassing as Kittery, the season Kittery showed up at a geisha party dressed in the crude emotions of a political revolutionary. Even if Cade were to keep this incident private, Suzanne winced at

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the idea of his thinking her as gauche as Kittery, as capable of such a major fashion faux pas. No, no. Better to let it pass.

Cade snored softly. Suzanne lay beside him, fists clenched, waiting for winter.

Finally, the new fashions were out! Suzanne went to Paris for the preseason shows, sitting in the first row at each important couture house, exultant. She saw, and was seen, and was happy.

The designers had outdone themselves, especially Suwela for Karl Lagerfield. The feeling was tremulous, ingenue, all the tentative sharp sweetness of virgin love. Pink, pale blue, white—lots of white—with indrawn gasps and wide-eyed sexual exploration. Ruffles and flowers and heart flutterings at a lingering look. Gianfranco Ferrè showed a marvelous silk, flowing biocloth abloom with living forget-me-knots, accessorized with innocence barely daring to touch the male model's hand. At Galliano, the jackets were matched with flounced bonnets and a blushing fear that a too-passionate kiss would lead . . . where? The models' knees trembled with nervous anticipation. And the ever-faithful Sendil showed an empire-waist ballgown in muslin—muslin!—that, he whispered to Suzanne, had been inspired solely by her.

Suzanne wanted everything. She spent more money than ever before at a preview. She could hardly wait for the official opening of the season. Cade and she, once more thirteen years old, with love new and sparkling and fraught with sweet tension. . . . While she waited for opening day, she had her hair grown long, her hips slimmed, and her eyes widened and colored, to huge blue orbs.

Maybe they could give a party. Everyone tremulous with anticipation and virgin hopes . . . wasn't there something called "spin the bottle"? She could ask the computer.

It was going to be a wonderful winter.

"No," Cade said.

"No?"

"Oh, don't look so crushed, love. Well, maybe, then. I mean, what does it matter, really?"

"What does it *matter?*" Suzanne cried. "Cade, it's the start of the season!"

He eyed her with amusement. But under the amusement was something else, the now-familiar feeling that he found her faintly ridiculous, casually distasteful. God, she couldn't wait to get him out of this wretched understated nonchalance.

Suzanne made an effort to speak lightly. "Well, if it doesn't matter, then there's no reason not to go for a bit of a change, is there?"

He flicked at a speck of dust on his sleeve. "I suppose not. But, then,

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love, no reason to go for change either, is there? This suits us well enough, don't you think?"

Suzanne tried not to bite her lip clear through. It was too close to opening day for tissue repair. "Well, perhaps, but one wants some variety, all the same. . . ."

He shrugged. "I don't, actually."

She cried, "But, Cade—!"

"Oh, Suzanne, don't get so worked up, it's quite tiresome. Can't we discuss it later?"

"But—"

"I have lunch with Jastinder. Or Kittery. Or somebody. Care to come? No? Well, suit yourself, love."

He waved to her and sauntered out.

She couldn't budge him. He didn't resist her; he just wasn't interested. Careless. Indifferent.

Opening day came. Suzanne stood in the bedroom, biting her bottom lip. What to do? Everything was ready. She'd programmed the room for pale pink walls with white wood molding, filmy curtains fluttering in the breeze, a view of gardens filled with lavender and June roses and wisteria and anything else the computer said was old-fashioned. The scent simulator was running overtime. Around Suzanne were the half-unpacked boxes of flouncy silks and sweet girlish slip-dresses and little kid slippers. Plus, of course, the white jackets and copper-toed boots for Cade. Who had glanced at the entire thing with amused negligence, and then gone out somewhere for a stroll.

"But you can't!" Suzanne had cried. "It's opening day! And you're still dressed in . . . *that*."

"Oh, love, what does it matter?" Cade had said. "I'm comfortable. And isn't all this stuff just a bit . . . twee? Isn't it, now?"

"But Cade—"

"I rather like what I'm used to."

"You're not used to it!" Suzanne had cried in anguish. "You can't be! You've only had it for a season!"

"Really? I guess so. Seems longer," Cade said. "See you later, love. Or not."

Now Suzanne scowled at the pills in her hand. There was a real problem here. If she took them, she would be garbed in the gentle sweet tremulousness of youth. Gentle, sweet, tremulous—and ineffective. That was the whole point. Ingenues were acted upon, not actors. But without the whole force of her will, could she persuade Cade to stop being such an ass?

On the other hand, if she didn't take the pills, she would be dressed wrong for the occasion. She pictured showing up at the Donnison lunch in the Alliani Towers, at the afternoon reception in the Artificial Islands,

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at Kittery's party tonight, dressed badly, shabbily, in last season's worn-out feelings . . . no, *no*. She couldn't. She had a reputation to maintain. And everyone would think that she couldn't afford new feelings, that she had lost all her money in data-atoll speculation or some other ghastly nouveau thing . . . damn Cade!

He came back from his stroll a few hours later, whistling carelessly. The vid was already crammed with "Where are you?" messages from their friends at the Donnison lunch. Breathless, ingenue messages, from people having a wonderful youthful time. And there was Cade, cool and off-hand in those detestable boring tweeds, daring to *whistle*. . . .

"Where have you *been?*" Suzanne said. "Don't you know how late we are? Come on, get dressed!"

"Don't whine, Suzanne, it's terribly unattractive."

"I never whine!" she cried, stung.

"Well, then, don't do whatever you're doing. Come lie down beside me instead."

It was the most assertive thing he'd said in months. Encouraged, Suzanne lay with him on the bed, trying to control her panic. Maybe if she were sweet enough to him. . . .

"You haven't dressed yet, either, have you, love?" Cade said. He was smiling. "That isn't the tentative embrace of an ingenue."

"Would you like that?" Suzanne said hopefully. "I can just change. . . ."

"Actually, no. I've been thinking, Suzanne. I don't want to get all tricked out as some sort of ersatz boy-child, and you don't want to go on wearing these casual emotions. So what about what I suggested at the end of last summer? Let's just go naked for a while. See what it's like."

"No!" Suzanne shrieked.

She hadn't known she was going to do it. She never shrieked like that—not she, Suzanne! Except, of course, when fashion decreed it, and that didn't really count. . . . What was she thinking? Of course it counted, it was the only thing that kept them all safe. To go *naked* in front of each other! Good God, what was Cade *thinking?* Civilized people didn't parade around naked, everything personal on display for any passing observer to pick over and chortle at, nude and helplessly exposed in their deepest feelings!

Or lack of them.

She struggled to sound casual. And she succeeded—or last season's pills did. "Cade . . . I don't want to go naked. Really, I don't think you're being very fair. We had it your way for a season. Now it should be my turn."

A long silence. For a moment Suzanne thought he'd actually fallen asleep. If he had *dared* . . .

"Suzanne," he said finally, "it's my detached impression that you always have it your way."

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It hurt so much that Suzanne's legs trembled as she climbed off the bed. How could he say that? She always thought in terms of the two of them! Always! She went into the bathroom and closed the door. Shaky, she leaned against the wall, and caught sight of herself in the mirror. She looked lovely. Blue eyes wide with surprised hurt, pale lip trembling, like a young girl suddenly cut to her vulnerable heart. . . .

And she hadn't even yet taken the season's pills!

Cade would have to come around. He would simply *have* to.

He didn't. Suzanne argued. She stormed. She begged. Finally, after missing three days of wonderful parties—irreplaceable parties, a season only opened once, after all—she dressed herself in the pills and a white cotton frock, and pleaded with him tremulously, weeping delicate sweet tears. Cade only laughed affectionately, and hugged her casually, and went off to do something else off-hand and detestable.

She dissolved the pills in his burgundy.

It bothered her, a little. They had always been honest with each other. And besides, it was such a scary thing for a young girl to do, her fingers shook the whole time as she broke open the capsules and a single shining crystalline tear dropped into the glass (how much salt would one tear add? Cade had a keen palate). But she did it. And, wide-eyed, she handed him the glass, her girlish bosom heaving with silent emotion. Then she excused herself and went to take a scented bath in pink bubbles and to do her hair in long drooping ringlets.

By the time she came out, Cade was waiting for her. He held a single pink rose, and his eyes met hers shyly, for just a moment, as he handed it to her. They went for a walk before dinner along a beach, and the stars came out one by one, and when he took her hand, Suzanne thought her heart would burst. At the thought that he might kiss her, the V-R waves blurred a little, and her breath came faster.

It was going to be a wonderful winter.

"Suzanne," Cade said, very low. "Sweet Suzanne . . ."

"Yes, Cade?"

"I have something to tell you."

"Yes?" Emotion thrilled through her.

"I don't like burgundy."

"What . . . but you . . ."

"At least not that burgundy. I didn't drink it. But I did run it through the molecular analyzer."

She pulled away from his hand. Suddenly, she was very afraid.

"I'm so disappointed in you, Suzanne. I rather hoped that whatever fashion said, we at least trusted each other."

"What . . ." she had trouble getting the words out, damn this tremulous high-pitched voice— "What are you going to do?"

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"Do?" He laughed carelessly. "Why do anything? It's not really worth making a fuss over, is it?"

Relief washed over her. It was last season's fashion. He was still wearing it, and it was keeping him casual about her betrayal. Nonchalant, offhand. Oh, thank heavens. . . .

"But I think maybe we should live apart for a bit. Till things sort themselves out. Don't you think that would be best?"

"Oh no! No!" Girlish protest, in a high sweet girlish voice. When what she wanted was to grab him and force her body against his and convince him to change his mind by sheer brute sexuality . . . but she couldn't. Not dressed like this. It would be ludicrous.

"Cade . . ."

"Oh, don't take it so hard, love. I mean, it's not the end of the world, is it? You're still you, and I'm still me. Be good, now." And he loped off down the beach and out the apartment door.

Suzanne turned off the V-R. She sat in the bare-walled apartment and cried. She loved Cade, she really did. Maybe if she agreed to go naked for a season . . . but, no. That wasn't how she loved Cade, or how he loved her, either. They loved each other for their multiplicity of selves, their basic and true complexity, expressed outwardly and so well through the art of change. That was what kept love fresh and romantic, wasn't it? Change. Growth. Variety.

Suzanne cried until she had no tears left, until she was completely drained. (It felt rather good, actually. Ingenues were allowed so much wild sorrow.) Then she called Sendil, at home, on a shielded frequency.

"Sendil? Suzanne."

"Suzanne? What is it? I can't see you, my dear."

"The vid's malfunctioning, I have audio only. Sendil, I've got some rather awful news."

"What? Oh, are you all right?"

"I'm . . . oh, please understand! I'm so alone! I need you!" Her voice trembled. She had his complete attention.

"Anything, love. Anything at all!"

"I'm . . ." Her girlish voice dropped to a whisper drenched in shame. "I'm . . . *enceinte*. And Cade . . . Cade won't marry me!"

"Suzanne!" Sendil cried. "Oh my God! What a master stroke! Are you going to keep it going all season?"

"I'm . . . I'm going away. I can't . . . face anyone."

"No, of course not. Oh my God, darling, this will just *make* your reputation!"

Suzanne said acidly, "I was under the impression it was already made," realized her mistake, and dropped back into ingenue. It wasn't hard, really; all she had to do was take a deep breath and give herself up to the drugs. She said gaspingly, "But I can't . . . I can't face it completely

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by myself. I'm just not strong enough. So you're the only person I'm telling. Will you come see me in my shame?"

"Oh, Suzanne, of course I'll stand by you," Sendil said, boyish emotion making his voice husky. Sendil always took a dose and a half of fashion.

"I leave tomorrow," Suzanne gasped. "I'll write you, dear faithful Sendil, to tell you where to visit me. . . ." She'd get a holo of her body looking pregnant custom-made. "Oh, he just threw me away! I feel so wretched!"

"Of course you do," Sendil breathed. "Poor innocent! Seduced and abandoned! What can I do to cheer you up?"

"Nothing. Oh, wait . . . maybe if I know my shame won't go on forever . . . but, oh, Sendil, I couldn't ask you what follows this season! I know you'd never let out a peep in advance!"

"Well, not ordinarily, of course, but in this case, for you . . ."

"You're the *only* one I'm going to let visit me, to hear about everything that happens. Everyone else will simply have to play along with you."

"Ahh." Sendil's voice thickened with emotion. "I'd do anything to cheer you up, darling. And believe me, you'll love the next season. After a whole season away, everyone will be panting to see how you look, every eye will be trained on you . . . and the look is going to be a return to military! You're just made for it, darling, and it for you!"

"Military," Suzanne breathed. Sendil was right. It was perfect. Uniforms and swords and guns and stern, disciplined command breaking into bawdy barracks-room physicality at night. . . . Officers pulling rank in the bedroom. . . . *That's an order, soldier—Yes, sir!* . . . The sexual and social possibilities were tremendous. And Cade would never skip two seasons of fashion. She would come back from the winter's exile with everyone buzzing about her, and then Cade in the uniform of, say, the old Royal Guards . . . and herself outranking him (she'd find out somehow what rank he'd chosen, bribery or something), able to command his allegiance, keeping a military bearing and so having to give away nothing of herself. . . .

It was going to be a wonderful spring. ●

We appreciate comments about the magazine, and would like to hear from more of our readers. Editorial correspondence should include the writer's name and mailing address, even if you use e-mail. Letters can be e-mailed to 71154.662@compuserve.com or posted to Letters to the Editor, *Asimov's*, 1270 Avenue of the Americas, New York, N.Y. 10020. Letters may be shortened and edited for publication. The e-mail address is for editorial correspondence *only*—questions about subscriptions should be directed to Box 5130, Harlan, IA 51593-5130.

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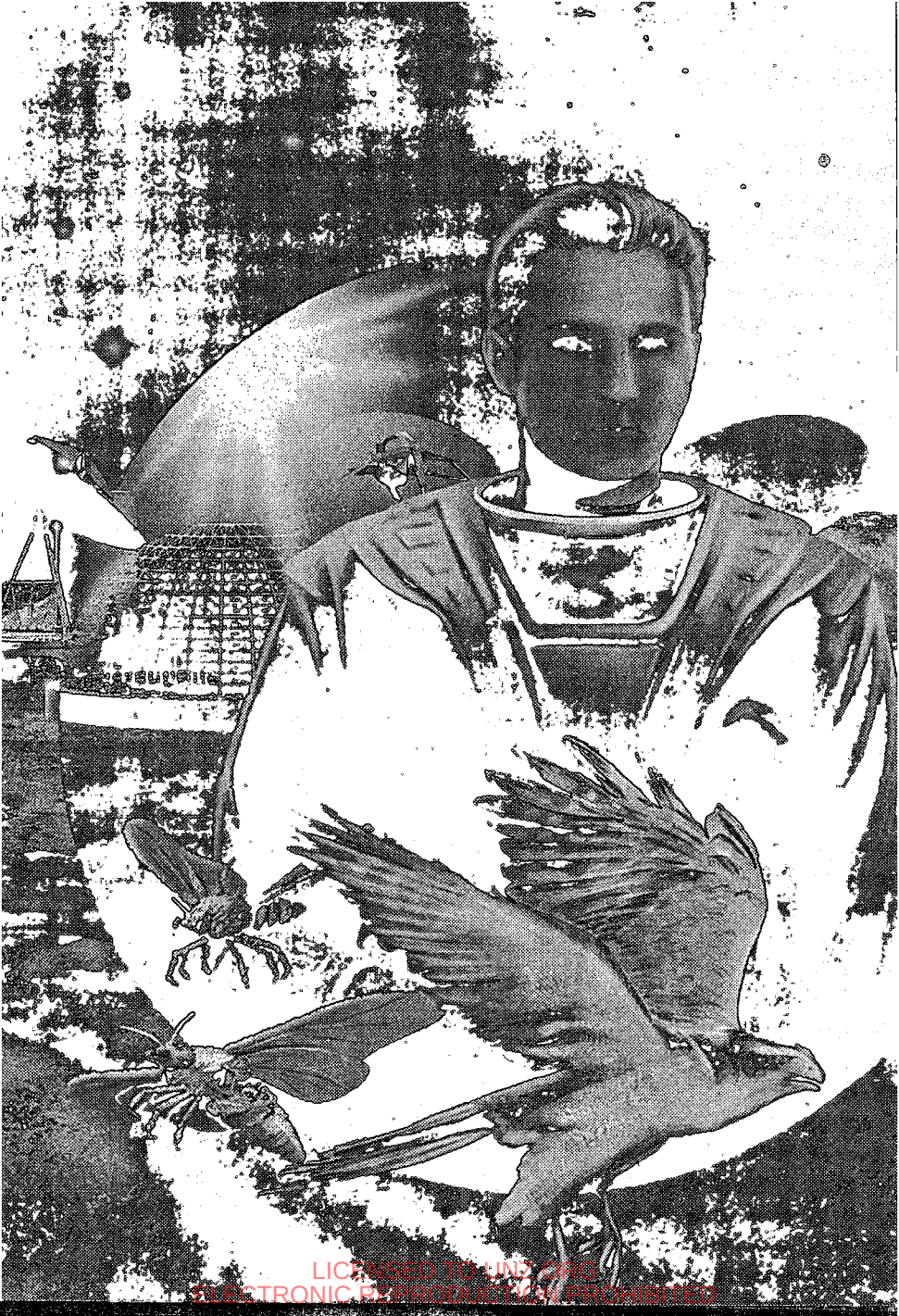

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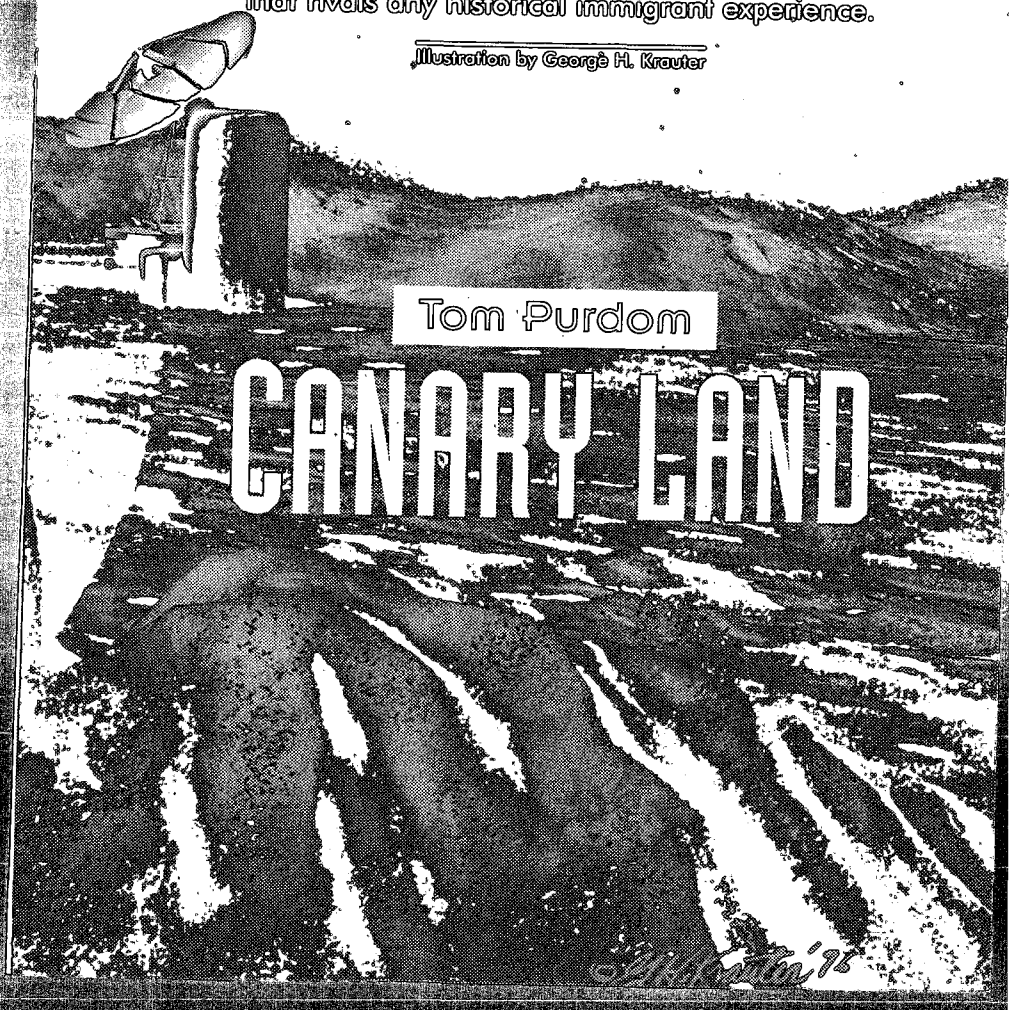
Of "Canary Land," the author tells us, "I attempted to draw on half of my childhood inheritance—my mother being the daughter of Italian immigrants who settled in Hartford, Connecticut. There's no factual connection beyond that, but I think it's useful to use aspects of your childhood in writing science fiction. It's done all the time in mainstream fiction, of course, but in SF, doing so moves you off in all kinds of unexpected directions. Instead of starting with a plot idea, you start with a general topic that has a lot of emotional content for you and see what kind of story develops." The result of this imaginative process is a daunting adventure that rivals any historical immigrant experience.

Illustration by George H. Krauter



Tom Purdom

CANARY LAND

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January 1997

Back home in Delaware County, in the area that was generally known as the "Philadelphia region," the three guys talking to George Sparr would probably have been descended from long dead ancestors who had immigrated from Sicily. Here on the Moon they were probably the sons of parents who had been born in Taiwan or Thailand. They had good contacts, the big one explained, with the union that "represented" the musicians who played in eateries like the Twelve Sages Café. If George wanted to continue sawing on his viola twelve hours a day, thirteen days out of fourteen, it would be to his advantage to accept their offer. If he declined, someone else would take his place in the string quintet that the diners and lunchers ignored while they chatted.

On Earth, George had played the viola because he wanted to. The performance system he had planted in his nervous system was top-of-the-line, state-of-the-art. There had been weeks, back when he had been a normal take-it-as-it-comes American, when he had played with a different trio or quartet every night, including Saturday, and squeezed in two sessions on Sunday. Now his performance system was the only thing standing between him and the euphoric psychological states induced by malnutrition. Live music, performed by real live musicians, was one of the lowest forms of unskilled labor. Anybody could do it, provided they had attached the right information molecules to the right motor nerves. It was, in short, the one form of employment you could count on, if you were an American immigrant who was, when all was said and done, only a commonplace, cookbook kind of biodesigner.

George's grasp of Techno-Mandarin was still developing. He had been scraping for money when he had left Earth. He had sold almost everything he owned—including his best viola—to buy his way off the planet. The language program he had purchased had been a cheap, quick-and-dirty item that gave him the equivalent of a useful pidgin. The three guys were talking *very* slowly.

They wanted to slip George into one of the big artificial ecosystems that were one of the Moon's leading economic resources. They had a contact who could stow him in one of the carts that delivered supplies to the canaries—the "long term research and maintenance team" who lived in the ecosystem. The contact would think she was merely transferring a container that had been loaded with a little harmless recreational material.

George was only five-eight, which was one reason he'd been selected for the "opportunity." He would be wearing a guaranteed, airtight isolation suit. Once inside, he would hunt down a few specimens, analyze their genetic makeup with the equipment he would be given, and come out with the information a member of a certain Board of Directors was interested

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in. Robots could have done the job, but robots had to be controlled from outside, with detectable radio sources. The Director (George could hear the capital, even with his limited knowledge of the language), the Director wanted to run some tests on the specimens without engaging in a direct confrontation with his colleagues.

There was, of course, a very real possibility the isolation suit might be damaged in some way. In that case, George would become a permanent resident of the ecosystem—a destiny he had been trying to avoid ever since he had arrived on the Moon.

The ride to the ecosystem blindsided George with an unexpected rush of emotion. There was a moment when he wasn't certain he could control the sob that was pressing against the walls of his throat.

He was sitting in a private vehicle. He was racing along a strip of pavement, with a line of vehicles ahead of him. There was sky over his head and a landscape around him.

George had spent his whole life in the car-dominated metropolitan sprawls that had replaced cities in the United States. Now he lived in a tiny one-room apartment, in a corridor crammed with tiny one-room apartments rented by other immigrants. His primary form of transportation was his own legs. When he did actually ride in a vehicle, he hopped aboard an automated cart and shared a seat with someone he had never seen before. He could understand why most of the people on the Moon came from Asiatic countries. They had crossed two hundred and fifty thousand miles so they could build a new generation of Hong Kongs under the lunar surface.

The sky was black, of course. The landscape was a rolling desert composed of craters pockmarked by craters that were pockmarked by craters. The cars on the black strip were creeping along at fifty kilometers per hour—or less—and most of the energy released by their batteries was powering a life support system, not a motor. Still, he looked around him with some of the tingling pleasure of a man who had just been released from prison.

The trio had to explain the job to him and some of the less technical data slipped out in the telling. They were also anxious, obviously, to let him know their "client" had connections. One of the corporation's biggest products was the organic interface that connected the brains of animals to electronic control devices. The company's major resource was a woman named Ms. Chao who was a big expert at developing such interfaces. Her company had become one of the three competitors everybody in the field wanted to beat.

In this case the corporation was upgrading a package that connected the brains of surveillance hawks to the electronics that controlled them.

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The package included genes that modified the neurotransmitters in the hawk's brain and it actually altered the hawk's intelligence and temperament. The package created, in effect, a whole new organ in the brain. You infected the brain with the package and the DNA in the package built a new organ—an organ that responded to activity within the brain by releasing extra transmitters, dampening certain responses, etc. Some of the standard, medically approved personality modifications worked exactly the same way. The package would increase the efficiency of the hawk's brain and multiply the number of functions its owners could build into the control interface.

Their Director, the trio claimed, was worried about the ethics of the *other* directors. The reports from the research and development team indicated the project was months behind schedule.

"Our man afraid he victim big cheat," the big one said, in slow Techno-Mandarin pidgin. With lots of emphatic, insistent hand gestures.

It had been the big one, oddly enough, who had done most of the talking. In his case, apparently, you couldn't assume there was an inverse relationship between muscle power and brain power. He was one of those guys who was so massive he made you feel nervous every time he got within three steps of the zone you thought of as your personal space.

The artificial ecosystems had become one of the foundations of the lunar economy. One of the Moon's greatest resources, it had turned out, was its lifelessness. Nothing could live on the surface of the Moon—not a bacteria, not a fungus, not the tiniest dot of a nematode, *nothing*.

Temperatures that were 50 percent higher than the temperature of boiling water sterilized the surface during the lunar day. Cold that was grimmer than anything found at the Antarctic sterilized it during the night. Radiation and vacuum killed anything that might have survived the temperature changes.

And what happened if some organism somehow managed to survive all of the Moon's hazards and cross the terrain that separated an ecosystem from one of the lunar cities? It still had to cross four hundred thousand kilometers of vacuum and radiation before it reached the real ecosystems that flowered on the blue sphere that had once been George's home.

The Moon, obviously, was the place to develop new life forms. The designers themselves could sit in Shanghai and Bangkok and ponder the three-dimensional models of DNA molecules that twisted across their screens. The hands-on work took place on the Moon. The organisms that sprouted from the molecules were inserted in artificial ecosystems on the Moon and given their chance to do their worst.

Every new organism was treated with suspicion. Anything—even the most trivial modification of a minor insect—could produce unexpected

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side effects when it was inserted into a terrestrial ecosystem. Once a new organism had been designed, it had to be maintained in a sealed lunar ecosystem for at least three years. Viruses and certain kinds of plants and insects had to be kept imprisoned for periods that were even longer.

According to the big guy, Ms. Chao claimed she was still developing the new hawk control interface. The Director, for some reason, was afraid she had already finished working on it. She could have turned it over to another company, the big guy claimed. And the new company could lock it in another ecosystem. And get it ready for market while the Director thought it was still under development inside the *old* company's ecosystem.

"Other directors transfer research other company," the big guy said. "Show him false data. Other company make money. Other directors make money. His stock—down."

"Stock no worth chips stock recorded on," the guy with the white scar on the back of his fingers said.

"You not commit crime," the big one said, with his hands pushing at the air as if he were trying to shove his complicated ideas into George's dumb immigrant's brain. "You not burglar. You work for Director. Stockholder. Director have right to know."

Like everything else on the Moon, the ecosystem was buried under the surface. George crawled into the back of the truck knowing he had seen all of the real Topside landscape he was going to see from now until he left the system. The guy with the scarred hand kept a camera on while he stood in the sterilizing unit and they talked him through the "donning procedure." The suit had already been sterilized. The donning procedure was supposed to reduce the contamination it picked up as he put it on. The sterilizing unit flooded him with UV light and other, less obvious forms of radiation while he wiggled and contorted. The big guy got some bobs and smiles from the third member of the trio when he made a couple of "jokes" about the future of George's chromosomes. Then the big guy tapped a button on the side of the unit and George stood there for five minutes, completely encased in the suit, while the unit supposedly killed off anything the suit had attracted while he had been amusing them with his reverse strip tease. The recording they were making was for his benefit, the big guy assured him. If he ran into any legal problems, they had proof they had administered all the standard safety precautions before he had entered the ecosystem.

The thing that really made George sweat was the struggle to emerge from the container. It was a cylinder with a big external pressure seal

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and they had deliberately picked one of the smaller sizes. *We make so small, nobody see think person,* the big guy had explained.

The trick release on the inside of the cylinder worked fine, but after that he had to maneuver his way through the neck without ripping his suit. Any tear—any puncture, any *pinhole*—would activate the laws that governed the quarantine.

The best you could hope for, under the rules, was fourteen months of isolation. You could only hope for that, of course, if you had entered the ecosystem legitimately, for a very good reason. If you had entered it illegally, for a reason that would make you the instant enemy of most of the people who owned the place, you would be lucky if they let you stay inside it, in one piece, for the rest of whatever life you might be willing to endure before you decided you were better off dead.

The people on the "long term research and maintenance team" did some useful work. An American with his training would be a valuable asset—a high level assistant to the people on the other side of the wall who really directed the research. But everybody knew why they were really there. There wasn't a person on the Moon who didn't know that coal miners had once taken canaries into their tunnels, so they would know they were breathing poisoned air as soon as the canaries keeled over. The humans locked in the ecosystem were the living proof the microorganisms in the system hadn't evolved into something dangerous.

The contact had placed the container, as promised, in the tall grasses that grew along a small stream. The ecosystem was supposed to mimic a "natural" day-night cycle on Earth and it was darker than any place George had ever visited on the real planet. He had put on a set of night vision goggles before he had closed the hood of the suit but he had to stand still for a moment and let his eyes adjust anyway.

His equipment pack contained two cases. The large flat case looked like it had been designed for displaying jewelry. The two moths fitted into its recesses would have drawn approving nods from people who were connoisseurs of bioelectronic craftsmanship.

The hawks he was interested in were living creatures with modified brains. The cameras and computers plugged into their bodies were powered by the energy generated by their own metabolism. The two moths occupied a different part of the great borderland between the world of the living and the world of the machine. Their bodies had been formed in cocoons but their organic brains had been replaced by electronic control systems. They drew all their energy from the batteries he fitted into the slots just behind each control system. Their wings were a little wider than his hand but the big guy had assured him they wouldn't trigger any alarms when a surveillance camera picked them up.

Insect like this in system. Not many. But enough.

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The first moth flitted away from George's hand as soon as he pressed on the battery with his thumb. It fluttered aimlessly, just above the tops of the river grasses, then turned to the right and headed toward a group of trees about a hundred meters from its launch site.

At night the hawks were roosters, not flyers. They perched in trees, dozing and digesting, while the cameras mounted in their skulls continued to relay data to the security system.

George had never paid much attention when his parents had discussed their family histories. He knew he had ancestors who came from Roumania, Italy, Austria, and the less prominent regions of the British Isles. Most of them had emigrated in the nineteenth century, as far as he could tell. One of his grandmothers had left some country in Europe when it fell apart near the end of the twentieth century.

Most of them had emigrated because they couldn't make a living in the countries they had been born in. That seemed to be clear. So why shouldn't he "pull up stakes" (whatever that meant) and head for the booming economy in the sky? Didn't that show you were made of something special?

George's major brush with history had been four sets of viewer-responsive videos he had studied as a child, to meet the requirements listed on his permanent educational transcript. His parents had chosen most of his non-technical educational materials and they had opted for a series that emphasized human achievements in the arts and sciences. The immigrants he was familiar with had overcome poverty and bigotry (there was always some mention of bigotry) and become prize-winning physicists and world famous writers and musicians. There had been no mention of immigrants who wandered the corridors of strange cities feeling like they were stumbling through a fog. There had been no indication any immigrant had ever realized he had traded utter hopelessness for permanent, lifelong poverty.

There had been a time, as George understood it, when the music in restaurants had been produced by electronic sound systems and unskilled laborers had carried food to the tables. Now unskilled labor provided the music and carts took orders and transported the food. Had any of his ancestors been invisible functionaries who toted plates of food to customers who were engrossed in intense conversations about the kind of real work people did in real work spaces like laboratories and offices? He had never heard his parents mention it.

Battery good twenty minutes. No more. Moth not come back twenty minutes—not come back ever.

He almost missed the light the moth flicked on just before it settled into the grass. He *would* have missed it, in fact, if they hadn't told him he

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should watch for it. It was only a blip, and it was really a glow, not a flash. He crept toward it in an awkward hunch, with both cases in his hands and his eyes fixed on the ground in front of his boots.

The small square case contained his laboratory. The collection tube attached to the moth's body fitted into a plug on the side of the case and he huddled over the display screen while the unit ran its tests. If everything was on the up and up, the yellow lines on the screen would be the same length as the red lines. If the "Director" was being given false information, they wouldn't.

It was a job that could have been handled by 80 percent—at least—of the nineteen million people currently living on the Moon. In his lab on Earth, there had been *carts* that did things like that. A four-wheeled vehicle a little bigger than the lab case could have carried the two moths and automatically plugged the collection tube into the analyzer. He was lurching around in the dark merely because a cart would have required a wireless communications link that *might* have been detectable.

The first yellow line appeared on the screen. It was a few pixels longer than the red line—enough to be noticeable, not enough to be significant.

The second yellow line took its place beside the second red line like a soldier coming to attention beside a partner who had been chosen because they were precisely the same height. The third line fell in beside its red line, there was a pause that lasted about five hard beats of George's pulse, and the last two yellow lines finished up the formation.

The moth had hovered above the hawk's back and jabbed a long, threadlike tube into its neck. The big changes in the bird's chemistry would take place in its brain, but some of the residue from the changes would seep into its bloodstream and produce detectable alterations in the percentages of five enzymes. The yellow lines were the same length as the red lines: ergo, the hawks were carrying a package exactly like the package they were supposed to be carrying.

Which was good news for the Director. Or George presumed it was, anyway. And bad news for him.

If the result had been positive—if he had collected proof there was something wrong with the hawks—he could have radioed the information in an encrypted one-second blip and headed straight for the nearest exit. His three bodyguards would have helped him through the portal—they'd *said* they would, anyway—and he would have been home free. Instead, he had to pick up his equipment, close all his cases, and go creeping through the dark to the other hawk nest in the system. He was supposed to follow the small stream until it crossed a dirt utility road, the big guy had said. Then he was supposed to follow the road for about four kilometers, until it intersected another stream. And work his way through another two kilometers of tangled, streamside vegetation.

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* * *

The habitat reproduced three hundred square kilometers of temperate zone forest and river land. It actually supported more plant, animal, and insect species than any stretch of "natural" terrain you could visit on the real twenty-first century Earth. Samples of Earth soil had been carried to the Moon with all their microorganisms intact. Creepers and crawlers and flying nuisances had been imported by the hundreds of thousands.

You couldn't understand every relationship in a system, the logic ran. *People* might not like gnats and snakes but that didn't mean the system could operate without them. The relationship you didn't think about might be the very relationship you would disrupt if you created a wonderful, super-attractive new species and introduced it into a real habitat on Earth. A change in relationship X might lead to an unexpected change in relationship Y. Which would create a disruption in relationship C. . . .

And so on.

It was supposed to be one of the basic insights of modern biological science and George Sparr was himself one of the fully credentialed, fully trained professionals who turned that science into products people would voluntarily purchase in the free market. The fact was, however, that he *hated* insects and snakes. He could have lived his whole life without one second of contact with the smallest, most innocuous member of either evolutionary line. What he liked was riding along in a fully enclosed, air-conditioned or heated (depending on the season) automobile, with half a dozen of his friends chattering away on the communications screen, while a first class, state-of-the-art control system guided him along a first class, state-of-the-art highway to a building where he would work in air conditioned or heated ease and continue to be totally indifferent to temperature, humidity, illumination, or precipitation.

Which was what he had had. Along with pizzas, steak, tacos, turkey club sandwiches, and a thousand other items that had flavor and texture and the great virtue that they were not powdered rice flavored with powdered flavor.

There had been women whose hair tossed across their necks as they gave him little glances across their music stands while they played quartets with him. (He had made the right decision, he had soon realized, when he had chosen the viola. The world was full of violinists and cellists looking for playing partners who could fill in the middle harmonies.) There had even been the pleasure of expressing your undiluted contempt for the human robots who were hustling like mad in China, Thailand, India, and all the other countries where people had discovered they, too, could enjoy the satisfactions of electronic entertainment, hundred year lifespans, and lifelong struggles against obesity and high cholesterol levels.

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George Sparr was definitely not a robot. Robots lived to work. Humans worked to live. Work was a *means,* not an end. *Pleasure* was an end. *Art* was an end. *Love* and *friendship* were ends.

George had worked for four different commercial organizations in the eleven years since he had received his Ph.D. He had left every one of them with a glowing recommendation. Every manager who had ever given him an evaluation had agreed he was a wonderful person to have on your payroll on the days when he was actually physically present. And actually concentrating on the job you were paying him to do.

The dogs weren't robots, either. They were real muscle-and-tooth living organisms, and they had him boxed in—right and left, front and back, with one prowling in reserve—before he heard the first warning growl. The light mounted on the dog in the front position overwhelmed his goggles before the control system could react. An amplified female voice blared at him from somewhere beyond the glare.

"Stand absolutely still. There is no possibility the dogs can be outrun. You will not be harmed if you stand absolutely still."

She was speaking complete sentences of formal Techno-Mandarin but the learning program she had used hadn't eliminated her accent—whatever the accent was. It didn't matter. He didn't have to understand every word. He knew the dogs were there. He knew the dogs had teeth. He knew the teeth could cut through his suit.

"I'm afraid you may have a serious problem, patriot. As far as I can see, there's only one candidate for the identity of this director they told you about—assuming they were telling you the truth, of course."

The ecosystem was surrounded by tunnels that contained work spaces and living quarters. They had put him in a room that looked like it was supposed to be some kind of art gallery. Half the space on the walls was covered with watercolors, prints, and freehand crayon work. Shelves held rock sculptures. He was still wearing his suit and his goggles, but the goggles had adjusted to the illumination and he could see the lighting and framing had obviously been directed by professional-level programs.

They had left him alone twice, but there had been no danger he would damage anything. The dog sitting two steps from his armchair took care of that.

The man sitting in the other armchair was an American and he was doing his best to make this a one-immigrant-to-another conversation. He happened to be the kind of big-bellied, white-faced, fast-food glutton George particularly disliked, but he hadn't picked up the contempt radiating from George's psyche. He probably wouldn't, either, given the fact

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that he had to observe his surroundings through the fat molecules that puffed up his eyelids and floated in his brain.

George could understand people who choked their arteries eating steaks and lobster. But when they did it stuffing down food that had less flavor than the containers it came in. . . .

"Do you understand who Ms. Chao is?" big-belly said.

George shrugged. "You can't do much biodesign without learning something about Ms. Chao."

The puffy head nodded once. They hadn't asked George about his vocational history but he was assuming they had looked at the information he had posted in the databanks. The woman had asked him for his name right after she had taken him into custody and he had given it to her without a fuss.

"Your brag screen looked very promising, patriot. It looks like you might have made it to the big leagues under the right circumstances."

"I worked for four of the largest R&D companies in the United States."

"But you never made it to the big leagues, right?"

George focused his attention on his arms and legs and consciously made himself relax. He pasted a smile on his face, and tried to make it big enough so that Mr. Styrofoam could see it through his eye slits.

"The closest I ever got to the other side of the Pacific was a weekend conference on La Jolla Beach."

"That's closer than I ever got. I was supposed to be a hardwired program genius—a Prince of the Nerds himself—right up to the moment I got my transcript certified. I thought if I came here I could show them what somebody with my brain circuits could do. And make it to Shanghai the long way round."

George nodded: the same sympathetic nod and the same sympathetic expression—he *hoped* it was sympathetic anyway—that he offered all the people who told him the same kind of story when they sat beside him on the transportation carts. Half of them usually threw in a few remarks to the effect that "doughfaces" didn't stand a chance anymore. He would usually nod in sympathy when they said that, too, but he wasn't sure that would be a good idea in this situation. His interrogator was putting on a good act, but the guy could be Ms. Chao's own son, for all George knew. George had never seen an Asian who looked that gross, but Styrofoam's mother could have decided anybody cursed with American genes had to possess a special, uniquely American variation on the human digestive tract.

"The database says you're a musician."

"I've been working in a restaurant. I bought a performance system when I was on Earth—one of the best."

"And now you're serenading the sages and samurai while they dine."

"That's why I'm here. They told me I'd be thrown out of my job if I turned them down."

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"Ms. Chao had a husband. Mr. Tan. Do you know him?"

"I've heard about the Tan family. They're big in Copernicus, right?"

"They're one of the families that control the Copernicus industrial complex. And make it such a wonderful place to work and raise children. This Mr. Tan—it's clear he's connected, but nobody knows how much. Ms. Chao married him. They went through a divorce. Somehow he's still sitting on the Board. With lots of shares."

"And he thinks his ex-wife is trying to put something over on him? Is that what this is all about?"

Chubby hands dug into the arms of the other chair. Arm muscles struggled against the low lunar gravity as they raised the bloated body to an upright position. The Prince of the Nerds turned toward the door and let George admire the width of his waistline as he made his exit.

"You're the one who's supposed to be coming up with answers, patriot. We're supposed to be the people with the questions."

There was a timestrip built into the base of George's right glove. It now read 3:12. When they had brought him into the working and living area, it had read 3:46.

George's suit was totally self-contained. He could breathe and rebreathe the same air over and over again. But nothing comes free. Bacteria recycled the air as it passed through the filtering system. Other bacteria generated the chemicals in the organic battery that powered the circulation system. Both sets of bacteria drew their energy from a sugar syrup. In three hours and twelve minutes, the syrup would be exhausted. And George could choose between two options. He could open the suit. Or he could smother to death.

The second interrogator was a bony, stoop shouldered woman. She spoke English with a British accent but her hand gestures and her general air of weary cynicism looked European to George's eye. She glanced at the timestrip—it now read 2:58—and sat down without making any comments.

The woman waved her hand as if she was chasing smoke away from her face. "You were hired by three people. They coerced you. They claimed you would lose your job if you didn't work for them."

"I didn't have any choice. I could come here or I could find a good space to beg. Believe me—this is the last place I want to be."

"You'd rather play little tunes in a restaurant than work in a major ecosystem? Even though your screens say you're a trained, experienced biodesigner?"

George offered her one of his more sincere smiles. "Actually, we play almost everything we want to most of the time. Mozart quintets. Fauré. Kryzwicki. Nobody listens anyway."

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"The three men who hired you told you they were hired by Mr. Tan. Is that correct?"

So far George had simply told them the truth—whatever they wanted to know. Now he knew he had to think. Was she telling him they wanted him to testify against Mr. Tan? Was Ms. Chao trying to get something on her ex-husband?

Was it possible they had something else in mind? Could they be testing him in some way?

"They're very tough people," George said. "They made a lot of threats."

"They told you all the things Mr. Tan could do if you talked? They described his connections?"

"They made some very big threats. Terminating my job was only part of it. That's all I can tell you. They made some very big threats."

The woman stood up. She bent over his timestrip. She raised her head and ran her eyes over his suit.

George didn't have to tell the canaries he didn't want to join them. Nobody wanted to be a canary. In theory, canaries didn't have it bad. They didn't pay rent. The meals they ate were provided free, so their diets could be monitored. They got all the medical care they needed and some they could have done without. They could save their wages. They could work their way out of their cage.

Somehow, it didn't work that way. There was always something extra you couldn't do without—videos, games, a better violin to help you pass the time. The artificial ecosystems were a little over thirty years old. So far, approximately fifteen people had actually left them while they still had the ability to eat and drink and do anything of consequence with women whose hair tossed around their neck while they played Smetana's first quartet.

And what would you really have, when you added it up? George had done the arithmetic. After twenty-five years in an ecosystem—if you did everything right—you could live in the same kind of room he was living in now, in the same kind of "neighborhood." With the same kind of people.

The other possibility would be to buy yourself a return trip to Earth. You'd even have some money left over when you stepped off the shuttle.

The timestrip read 2:14 when the woman came back. This time she put a glass bottle on a shelf near the door. George couldn't read the label but he could see the green and blue logo. The thick brown syrup in the bottle would keep the bacteria in his life support system functioning for at least ten hours.

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He was perfectly willing to lie. He had no trouble with that. If they wanted him to claim his three buddies had told him they were working for Mr. Tan, then he would stand up in front of the cameras, and place his hand on the American flag, or a leather bound copy of the last printed edition of *The Handbook of Chemistry and Physics*, or some similar object of reverence, and swear that he had clearly heard one of his abductors say they were employees of the said Mr. Tan. That wasn't the problem. Should he lie before the canaries let him out? And hope they *would* let him out? Or should he insist they let him out first? *Before* he perjured himself?

And what if that *wasn't* what they wanted? What if there was something *else* going on here? Something he didn't really understand?

The people he was talking to were just the fronts. Back in the city there were offices and labs where the babus who really counted made the real choices. Somewhere in one of those offices, somebody was looking at him through one of the cameras mounted in the corners of the room. Right now, when he looked up at the camera in the front left hand corner, he was looking right into the eyes of someone who was sitting in front of a screen sixty kilometers away.

If they would take away the cameras, he could just ask her. *Just tell me what they want, lady. We're both crawling around at the bottom of the food chain. Tell me what I should do. Will they let me out of here if I cooperate first? Will I get a better deal if I tough it out right to the last minute? Are all of you really working for Mr. Tan?*

And what would he have done with her answers when he got them? Did any of the people in this place understand the situation any better than he did? In the city, he hobbled around in a permanent psychological haze, surrounded by people who made incomprehensible mouth noises and hurried from one place to another on incomprehensible missions. In the ecosystem, the canaries puttered with their odd jobs and created their picture of the world from the information that trickled onto their screens.

"I understand there's a visitors' lounge attached to the outside of the ecosystem," George said.

"And?" the woman said.

"I'll be glad to tell you anything I know. I just want to get out of here—out of the system itself. There's no way I can get away if you let me get that far—just to the lounge. I'll still need transportation back to the city, right?"

The woman stood up. She stopped in front of the syrup bottle and picked it up. She turned it around in her hand as if she were reading the label. She put it back on the shelf. She glanced at the dog. She slipped out the door.

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The time strip read 0:54 the next time the woman came back. The dog turned her way and she shook her head when she saw the soulful look in its eyes.

"You're putting a strain on his toilet training," the woman said.

"Suppose I do give you a statement? Is there any guarantee you'll let me go?"

"Are you trying to bargain with us?"

"Would you expect me to do anything else?"

"You think you're better than us? You think you deserve all that *opportunity* you thought they were going to give you when you left Earth?"

George shrugged. "I couldn't get a job on Earth. Any kind of job. I just came here to survive."

"They wouldn't even pay you to play that music you like?"

"On Earth? There would have been twenty thousand people lined up ahead of me."

"There's no way you can bargain with us, George. *You* answer the questions. *We* relay the answers. *They* decide what to do. There's only one thing I can guarantee."

"In fifty-four minutes, I'll have to open the suit and stay here."

"Right."

They didn't let him out when they had his statement. Instead the woman poured syrup into the flask that fueled his life support system. Then she walked out and left him sitting there.

The urine collection system on his leg was a brand name piece of equipment but he couldn't empty the receptacle without opening the suit. He had already used the system once, about an hour after they had captured him. He didn't know what would happen the next time he used it. No one had thought about the possibility he might wear the suit more than five hours.

The woman smiled when she re-entered the room and caught him fidgeting. The first dog had been replaced a few minutes after it had communicated its message but no one even mentioned *his* problem.

The woman had him stand up in the middle of the room and face the left hand camera. He repeated all his statements. He told them, once again, that the guy with the scarred fingers had mentioned Mr. Tan by name.

The timestrip said 3:27 when they left him alone this time. They had given him a full five hour refill when they had poured in the syrup.

The timestrip read 0:33 when they put him in the security portal. Bigbelly and the woman and three other people stared through the little square windows. A no-nonsense voice talked him through the procedure in Hong Kong British.

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He was reminded that a lapse in the procedure could result in long-term isolation. He stood in an indentation in the floor. He stuck his hands into a pair of holes above his head. Robot arms stripped the suit. Heat and radiation poured into the portal.

George had never been a reader, but he had played in orchestras that accompanied two operatic versions of the Orpheus legend. He kept his eyes half shut and tried not to look at the door that would take him back to the ecosystem. When he did glance back, after the other door had swung open, the woman and big-belly looked, it seemed to him, like disappointed gargoyles. He started to wave at them and decided that would still be too risky. He walked through the door with his shoulders hunched. And started looking for the two things he needed most: clothes and a bathroom.

The lounge was just a place where drivers and visitors could stretch their legs. There was a bathroom. There was a water fountain. There was a kitchen that checked his credit when he stuck his thumb in the ID unit. And offered him a menu that listed the kind of stuff he had been eating since he arrived on the Moon.

He queried taxi services on the phone screen and discovered a trip back to the city would cost him a week's wages. He had never been naked in a public place before and he didn't know how to act. Were the canaries watching him on the single camera mounted in the ceiling?

"I didn't do this because I wanted to," he told the cameras. "I don't even know what's going on. I just want to get out of here. Is that too much to ask?"

A truck entered the garage space under the lounge. A woman who was old enough to be his mother appeared in one of the doors and handed him a wad of cloth. The shirt was too long for him but it was the only thing she had. He stood around for an hour while she ate a meal and talked to people on the phone. He couldn't shake off the feeling he was wearing a dress.

He had missed a full shift at the Twelve Sages Café but the first violinist had left him a message assuring him they had only hired a temporary replacement. They could all see he was jumpy and preoccupied when he joined them at the start of the next shift but no one said anything. He had always been popular with the people he played with. He had the right temperament for a viola player. He took his part seriously but he understood the give-and-take that is one of the primary requirements of good chamber playing.

The big guy lumbered into the Twelve Sages Café a month later. He

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smiled at the musicians playing in the corner. He threw George a big wave as he sat down.

They were playing the slow movement of Mendelssohn's A Major quintet. George actually stumbled out of the room with his hands clutching his stomach. He managed to come back before the next movement started but he lost his place three times.

The second violinist took him aside after the last movement and told him he was putting all their jobs in danger. She came back to his apartment after the shift ended.

Six months later a woman came up to George during a break and asked him if he gave lessons in style, interpretation, and the other subjects you could still teach. Eight months after that he had seven students. The second violinist moved in with him.

Then the first violinist discovered one of the most famous restaurants in the city was looking for a new quartet. And George did something that surprised him just as much as it surprised every one else. He told the first violinist they should abandon the other viola player, develop their interpretation of two of the most famous quartets in the repertoire, and audition for the other job. They would have to spend all their leisure, non-sleeping hours studying Chi-Li's Opus 12 and Beethoven's Opus 59, No. 2, but the second violinist backed him up. The other two were dubious but they caught fire as George guided them through the recordings and interpretative commentaries he selected from the databanks. The restaurant owner and her husband actually stood up and applauded when they finished the last note of the Chi-Li.

The restaurant paid unskilled labor real money. It was also a place, George discovered, where some of the customers actually listened to the music. They were busy people—men and women who were making fortunes. Someday they might buy performance systems themselves and enjoy the pleasure of experiencing music from the inside. For now, they sat at their tables like barons and duchesses and let the commoners do the work. Once every three or four days somebody dropped the musicians a tip that was bigger than all the money their old quintet had received in a week.

The other members of the quartet knew they owed it all to George. Anyone could buy a performance system and play the notes. George was the guy who understood the shadings and the instrumental interactions that turned sounds into real music. He had created a foursome that worked well together—a unit that accepted his ideas without a lot of argument.

George had occasionally exercised that kind of leadership when he had been playing for pleasure on Earth. Now he did it with all the intensity of someone who knew his livelihood depended on it.

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* * *

George searched the databanks twice. He didn't like to spend money on things he didn't need, even after he began to feel more secure. As far as he could tell, Ms. Chao was still the chief designer in her company. Mr. Tan had resigned from the board four months after George's visit to the canary cage. Then he had rejoined the board six months later. It occurred to George that Ms. Chao had somehow tricked Mr. Tan into doing something that looked stupid. But why did she let him rejoin the board later?

The second violinist thought it might have something to do with family ties.

"Everybody says the Overseas Chinese have always been big on family ties," the second violinist pointed out. "Why should the off-Earth Chinese be any different?"

The whole business became even more puzzling when one of George's students told him she was really glad "Tan Zem" had recommended him. Three of his first four students, George discovered, had looked him up because Mr. Tan had steered them his way. Had Mr. Tan felt guilty? Had he been motivated by some kind of criminal code of honor? Finally George stopped trying to figure it out. He had a bigger apartment. He had a better job. He had the second violinist. He had become—who would have believed it?—the kind of immigrant the other immigrants talked about when they wanted to convince themselves a determined North American could create a place for himself in the new society humanity was building on the Moon.

He had become—by immigrant standards—a success. ●

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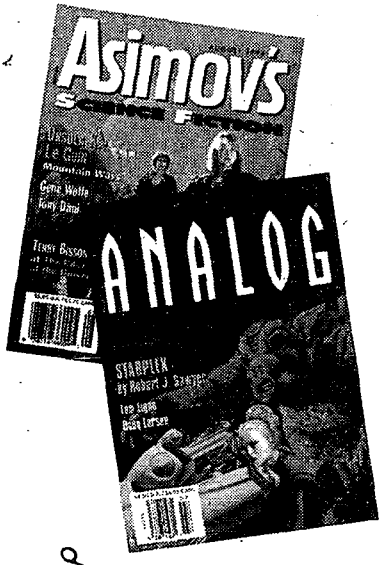

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Daniel Marcus

Daniel Marcus spends his days at the Lawrence Berkeley Laboratory designing adaptive algorithms for reacting flow, and his free time teaching creative writing at the University of California Extension, working on his second novel, and writing short stories. His latest tale for *Asimov's* is a wicked new story about what it means to be . . .

KILLED IN THE RATINGS

Illustration by Steve Cavallo

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Marco popped up another window to get the SkyCam view, the enhanced infrared casting everything in pearly green phosphorescence. It was a bit jerky; the little blimp was probably trying to tack against a strong headwind. He dragged the window to a corner of the screen.

They were about half a block behind her now, closing fast. She broke into a run. *Good.* Marco nudged a slider switch on the virtual control panel to crank up the sound a bit. Her light feet slapped against the street, counterpoint to the heavy footsteps of the two men chasing her. He boosted the presence and could just make out her breathing—shallow, panicky gasps. He could enhance it more later, or overlay something from the sound library.

She ducked into the doorway of a building, her pursuers following close behind. *Shit.* Marco popped another couple of windows to see if their shoulder cams were picking up, but it was too dark in the building's entrance. Grainy shadows jerking back and forth, sounds of struggle. She screamed and they dragged her into the street.

The resolution still wasn't very good, not nearly enough available light. It was fine for the stalk—the shadows made everything look menacing. But you needed some serious bit density for the hand-to-hand.

Laurel must have been giving them field directions from the mobile unit, her voice buzzing out of their mastoid speakers like a guilty conscience, because suddenly they dragged the victim from the shadows in front of the building into the bright circle of light cast by a streetlamp.

Four windows open now, tiled across the workstation screen—the SkyCam, the mobile unit, and the two shoulder cams. Marco felt like God on an electronic throne.

From one of the shoulder cams, a tight, fleeting shot of the woman's face. Her eyes were wide, whites showing all around, like a frightened horse. *Outstanding.* Marco froze the image and blew it up until her face filled the screen, popped it into another window, and superimposed the streetscape view from the mobile unit.

"Goddamn, I'm good," he muttered.

One of the men had a knife out and was waving it around in the air, leaving a complex pattern of trails on the screen. It was a great effect. Marco boosted the contrast to enhance it.

The woman broke free and almost got away, but the taller of the two tackled her and she went down hard, scraping her face on the pavement. First blood, black in the light.

She was pleading now, her voice a keening monotone. "Don't hurt me, please, please, don't hurt me."

Marco looped it and put a drum patch underneath, his hands alternately flying across the keyboard and caressing the virtual controls onscreen. The sound of their blows, their grunts and heavy breathing, rose

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now over the hip-hop dub of her whining pleas. Marco made a note to himself to give Lou in Production a call about marketing a single.

They had her shirt off now. The shorter man was squeezing her breasts while his companion held her with one hand and punched her repeatedly in the face with the other. Her lip was split and one of her eyes was swollen completely shut. She was still struggling, but weakly. The jerky motion of the shoulder cams synched perfectly with the dub's insistent rhythm.

Suddenly, she went limp. *Damn.* Lost consciousness, maybe even cardiac arrest. That's the trouble with these fucking animals, Marco thought, no sense of timing. They smelled a little blood and went apeshit.

They were still hammering on her, slamming her in the head and jabbing at her naked torso with the knife. The shorter guy started pulling her pants off, exposing pale, white thighs. They would probably fuck her anyway, dead or not.

Marco grimaced. No way he could get *that* past the Board. Still, he had plenty of good footage, and for gravy, a sweet, little dub.

It was a wrap.

Marco watched the pair of killers through the two-way mirror. He had to look closely to distinguish them from the ones he'd seen earlier that morning—they all had the same feral, vacuous look about them. These two sat at the head of the long, oak table in the conference room, out of place in that chrome-edged, corporate opulence. They didn't seem to mind, though, leaning back in the leather chairs, looking around with an air of relaxed boredom.

The taller one, the one with the hair-net and the gang-scars on his cheeks, pulled out a cigarette and lit up. His companion looked at him and grinned, showing a mouthful of stainless steel, the incisors filed to sharp points.

The door to the observation room slid open with a sigh and Marco turned around. Laurel stood in the doorway, a half-smile on her face.

"Don't you think you should remind him that tobacco's illegal?" she asked, stepping into the little room and taking a seat beside him. The door hissed shut.

"I think I'll pass. Jesus Christ, where did you find these two? They're practically Neolithic."

"The usual audition procedure. They showed up for the interview and the guy with the hair-net—his name's Creature, incidentally—the guy pulls a cat out of his shoulder bag and rips its head off, right there on the spot. 'I wanna be on TV,' he says. I've seen the clip from the security cam—it's unbelievable. His buddy's name is Seven. I don't think he speaks. At least I've never heard him."

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"Creature and Seven?"

"Yeah." She shrugged. "Don't ask, okay?"

Marco sighed. "Well, we're always on the lookout for a few good men. Milo and Winston are getting sloppy, anyway." He stood up. "Let's go talk to them."

Marco let Laurel precede him out the door of the observation room. She carried herself with the confidence of someone whose star is rising.

Digging up new talent herself, he thought. The little cooze is getting ambitious.

Creature looked up when Marco and Laurel walked in the door. He blew a big, lazy smoke ring and jabbed his index finger through it.

"'S'up?" he said. Seven flashed another metallic grin.

"Creature," Laurel said. "Seven. This is Marco, the show's producer."

Creature looked him up and down. Marco could sense the calculation, trying to scope out influence, level of fear, the power relationship between him and Laurel.

Seven's eyes shone with a dull, animal light. Marco shuddered inwardly. If the eyes are windows to the soul, Seven's revealed a strip-mall parking lot full of abandoned cars.

"So you want to be on television," Marco said.

Creature nodded. "I love your show, man. Me an' Seven were watchin' the other night when you had a couple of sams take down a QuikStop. Wiped the owner an' the customers an' cut with a bottle of Maddog. I say to Seven, 'We can do that.'" He turned to Seven. "Right?"

Seven nodded, grinning.

"I'm sure you'll do just fine," Marco said. "You know how the show works, then. We wire you with sound and vid and you go out and—" he paused.

"Romp and stomp," Creature said.

Seven grinned again. That mouthful of metal was beginning to really give Marco the creeps.

"Yes, good." Marco smiled thinly. He looked over at Laurel and nodded.

She produced a smartslate, called up the standard contract, and slid it across the table to Creature.

"Can you read?" she asked.

"Fuck no."

Laurel pressed a corner of the slate; little animated glyphs began sliding across the screen. Two men shaking hands. Sundry acts of cartoon mayhem. One man handing another bags of money.

"Do you understand this contract?" she asked.

"Sure," Creature said. "It says that me an' Seven go out an' fuck 'em up an' you give us money."

"Close enough," Laurel said. "If you'll give me your thumbprints here."

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She indicated the appropriate regions. "And here." Creature and Seven complied.

Close enough indeed, Marco thought. Actually what the contract said was that Mondo Entertainment practically owned these two chuckleheads, lock, stock, and semi-automatic weapons, that they signed over all rights to everything they said or did, on all media currently known or ever to be devised.

"Very good," he said. "Looking forward to working with you." He slid his chair back and got up. "Laurel will get you set up with shoulder cams and mikes, mastoid speakers, the works." He looked at her. "I want you to handle this personally."

Laurel shot him a dirty look. That was scut, usually reserved for production assistants, not assistant producers.

"You got it, Marco," she said.

He could feel their eyes on him as he walked out of the room. Just as the door slid shut, he thought he heard a bark of laughter from Creature, but it might have been his imagination.

He hoped Laurel wasn't stupid enough to get in an elevator alone with those two.

Then again, maybe it wouldn't be such a bad idea.

Marco popped the dub he'd made earlier, turned up the volume, and leaned back in his chair.

Don't hurt me, please, please, don't hurt me.

The nearly palindromic symmetry lent itself nicely to looping. It still needed something, maybe a percussive horn section patch hammering the downbeats, but it wasn't half bad.

He looked over his schedule, tapping his fingers on the desk in time with the dub. Lunch at Bibo's with Laurel and a network zeck named Spivak. Marco knew the name but had never met her. Laurel set it up; something about it didn't smell quite right. He would love to beg off, but he had to cover his ass. Fortunes rose and fell during lunches like this. Shows were canceled and created, careers sent rocketing skyward or crashing into the ground.

Afterward, a good long stretch of studio time, then a release interview. Marco grimaced. He really hated those. The victim's relatives sat there wringing their hands and whining while Marco dangled larger and larger sums of cash in front of their eyes. He felt like an alchemist, transmuting grief into greed. It could get expensive.

He was late for lunch. Laurel and Spivak were already there, at a table in the back, leaning toward each other and laughing.

"Marco," Laurel said. "We wondered if you'd stood us up. We've already ordered." She was wearing a smile, but it was thin as a playing card.

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Bitch. "This is Julia Spivak," she continued after a calculated pause, "from upstairs at Mondo."

"The Creative Division," Spivak said. "New projects."

She shook his hand with a bonecrushing grip.

"I know you by reputation, of course," Marco said. As a ballbuster, he thought to himself. He was late for lunch because he'd made a few phone calls, trying to get the skinny on her. It didn't sound good—she'd left a trail of bodies on her way to her current state of grace that made Napoleon look like the Dalai Lama.

A waiter appeared, hovering diffidently until Marco looked up.

"Hello, my name is Hans and—"

"I don't care what your name is. Get me a green salad, no dressing, balsamic vinegar on the side. And a bottle of distilled water."

Hans nodded and scurried off. Marco looked at Spivak. She had that big-jawed, Katy Hepburn, don't-mess-with-me look about her. He wondered suddenly if she was fucking Laurel, doing the old slip-and-slide. He glanced at Laurel, trying to read the body language, and it was clear. The way they'd been leaning together when he first walked in, the surreptitious, little glances.

He was screwed.

"I saw the raw footage from yesterday," Spivak said.

Footage, Marco thought. She's older than she looks.

"Some nice hand-to-hand," she continued, "but your actors are a little too enthusiastic."

Marco flushed. "Yeah, the field direction could have been better." Out of the corner of his eye, he saw Laurel stiffen. *Bullseye.* "I just hired some new talent this morning."

"Yes, I heard abut them. Creature and—" She turned to Laurel. "—Seven? We have high hopes for them."

She paused, taking a sip of wine. "Because *something's* going to have to pull your ratings out of the shithouse."

"Hey, wait a minute, they're not that bad."

Spivak made a clucking sound. "You've dropped six points since last month, and that's part of a much longer downturn. There's a lot of talk going on upstairs about whether or not reality-based programming has had its day." She looked directly at him. Her eyes were black as a crow's. "Or whether you've had yours."

"The ratings always fluctuate, everybody knows that. Tides, sunspots, who the fuck knows? The share for *Killers!* is pretty steady if you look at the long-term stats."

She put her hand on his arm. "I'm on your side, Marco. Believe me. *Killers!* is a great show and we're going to do everything we can to salvage it." She paused. "Laurel has some ideas I think you ought to hear."

Marco struggled to keep his cool. Salvage my ass, he thought.

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Laurel cleared her throat. "Well, part of the problem with *Killers!* is overhead—the field crew, the SkyCam, the remote hardware." She paused. "Excessive post-production."

A stab at Marco's predilection for special F/X. Fucking bitch. He wanted to jab a fork in her eye.

"And the releases alone suck up nearly a quarter of the show's revenue," Laurel continued. "Focus groups say that what they want is blood—everything else is padding. So let's give the people what they want."

She took a deep breath and put both hands on the table, palms down. Here it comes, Marco thought.

"Where do you find blood?" she continued. "Hospital emergency rooms, that's where. Especially large, urban hospital emergency rooms. Highland in Oakland, for instance. Gunshots, stabbings, stompings, wife-beating, kiddie torture—the works. We just modify the security cam that's already in place, so we don't have to fuck around with a mobile unit. We don't have to worry about releases, either—Mondo owns an insurance consortium and *they* own half the hospitals in the country, so we've got 'em by the balls. We can call it *Crash Cart* or something zingy like that. Practically zero overhead, maximal 'B' and 'G.' "

"Blood and guts is fine," Marco said, "but you need some action, too."

Laurel shrugged. "So every now and then we hire a couple of your goons from *Killers!* to do a guest spot, walk into surgery with an Uzi and open up."

Oh, great, Marco thought. They're *my* goons now.

"Call it a terrorist attack," Laurel was saying. "Or don't explain it at all. It's not a problem."

She looked from Marco to Spivak, then back at Marco. "So what do you think?"

What a performance, Marco thought. He looked at Spivak. She arched an eyebrow at him. He felt like he was treading water with cement flippers.

"Well," he said, cautiously. "I think it has promise. The concept's different enough from *Killers!* that Mondo can float both of them."

"Absolutely," Spivak said. "Laurel, set it up with Highland. I want a pilot into the focus groups in three weeks." She turned to Marco. "I'm going to kick you upstairs, Marco. Executive producer. Let Laurel handle the day-to-day business for both shows so we can keep you focused on the big picture. What do you think?"

He felt like he'd been kicked in the head by a horse. "I don't know what to say."

The waiter arrived with their lunch—Marco's salad, which he dropped on the table with a perceptible clatter. A thick, bloody steak for Spivak. Sashimi for Laurel.

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Marco hoped it gave her worms.

The rest of the afternoon went fairly well, all things considered. He had a great studio session, massaging the rough edges out of the dub. And he managed to hold the settlement to the bereaved parents of the bimbo who'd bought it for the upcoming show down to fifty kilobucks, which brightened his spirits considerably. By the time he was driving home that evening, his mood was almost philosophical.

Laurel had really pulled an end-run on him, but he could land feet first. He always did. Besides, *Crash Cart* or whatever the hell they were going to call it sounded like a fucking bore. In two months they'd be begging him to get back in the trenches.

Meanwhile, life was sweet. Laurel was out of his hair for awhile. With a fancy title and no real duties, he'd have plenty of time for more studio work, which was what he really loved.

He popped the bead he'd been working on into the stereo and cranked up the volume, filling the car with sound. *Don't hurt me, please, please, don't hurt me.* On the approach to the Bay Bridge, he turned the controls over to the Grid and sat back in the plush leather seat, tapping his fingers on the dash.

The lights of San Francisco receded behind him; the dark mass of Treasure Island loomed ahead. A Free Zone, ever since the Army pulled out back in the Nineties. Squatters and crazies, mostly, total chaos. Marco wouldn't even send a camera crew in there, not without an armed backup.

His dashboard beeped at him and the terminal screen flickered on.

SYSTEM SHUTDOWN MESSAGE
This vehicle's CPU will shut down in sixty seconds.
Please pull over immediately.

Fuck. His car hadn't crashed in months. What the hell was going on? He tapped the controls, trying to call up a diagnostics program.

Another beep.

SYSTEM SHUTDOWN MESSAGE
This vehicle's CPU will shut down in thirty seconds.
Please pull over IMMEDIATELY.

Marco logged off the Grid and pulled over onto the shoulder. He picked up the phone and held it to his ear.

Dead.

He looked around. Cars whizzed by to his left. Halogen lights arched high over the roadbed. Beyond, the wooded hills of Treasure Island

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loomed thick with shadow. In the distance, giant, skeletal structures rose above the Oakland docks like metal dinosaurs, throwing shimmering reflections onto the waters of the Bay.

A battered van pulled over about fifty yards in front of him. Its backup lights came on and it careened toward him, stopping just in front of his bumper. Two men got out.

Marco tensed, reaching into the glove compartment for his Mace. Then he recognized them. Creature and Seven.

He opened the door and got out.

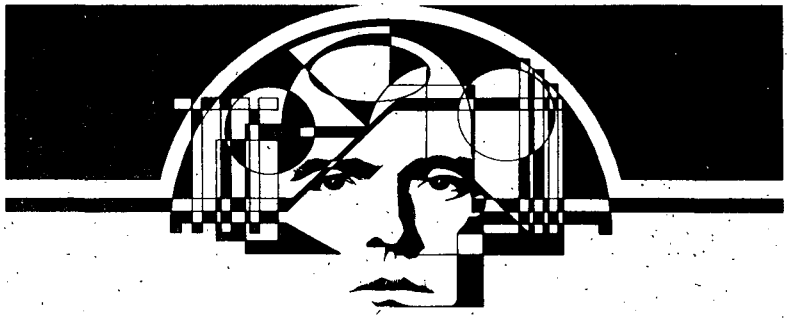
"Man, am I ever glad to—"

"Shut up." Creature slammed a closed fist into the side of his head. Marco staggered back against the side of the car.

For the first time, he noticed the tiny cameras perched on their shoulders, lenses glittering like insect eyes. Creature cocked his head, as if listening to an imaginary voice. He looked at Marco.

"Laurel says to tell you she's givin' you your own special. The ratings'll go through the roof."

He pulled out a knife and waved it in front of Marco's face, back and forth, back and forth. Seven's steel teeth flashed brightly in the halogen light. ●



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UNNURTURING NATURE: the B. F. Skinner Blues

Unmothered and unfathered,
the box you put me in,
dear daddy,
has everything a little body needs—
thin gruel in measured doses,
it even keeps me clean.
No need for human hands to hold me;
this patient, vigilant attendant
unwords, unhands, unholds me.
The walls are padded
and I scream.

—Sandra Lindow

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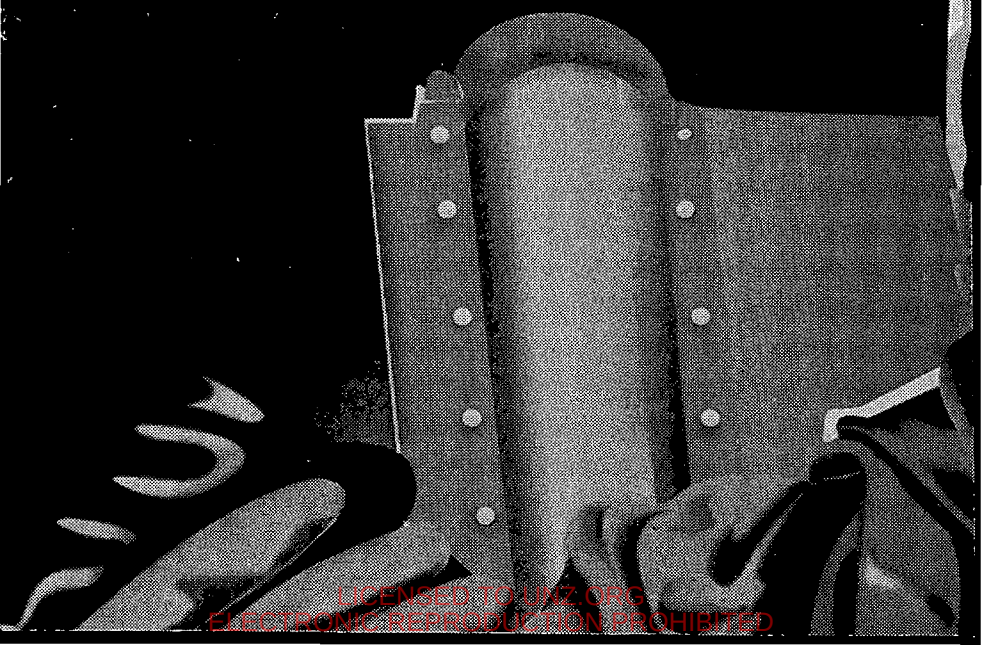
Stephen Baxter

ZEMLYA

Stephen Baxter's intriguing novel, *The Time Ships* (which was published in 1995 by HarperCollins UK and in the US in 1996 by HarperPrism), has been acclaimed by Arthur C. Clarke as "the most outstanding work of imaginative fiction since Stapledon's *Last and First Men*." The book recently won the Japanese Sei´un award for best novel (translation) and it was a finalist for the Hugo. The author's latest novel, *Ares*, is just out from HarperCollins UK.

Illustration by Anthony Bari



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January 1997

Yuri Gagarin made ready to fly to Venus.

The Proton booster was a slim black cylinder. The three supporting gantries had tipped back on their counterweights, so that the rocket stood at the heart of a gaunt, open flower of metal. Beyond the launch pit, the flat Kazakhstan steppe had erupted into its brief spring bloom, with evanescent flowers pushing through the hardy grass.

And all around Gagarin there were faces: the faces of technicians and engineers, turned to *him,* as the steppe flowers turn to the sun. Faces shining with awe. Even the *zeks,* the political prisoners in their drab uniforms, had been allowed to see him today.

Gagarin, in his orange pressure suit and white ribbed helmet, smiled on them all. It was just as it had been in 1961, three years ago, when he had become the first human to journey into space. Gagarin felt a surge of elation, of command; he basked in the warm attention.

Gagarin stepped up to the launch pit. He looked up at the six flaring strap-on boosters that clustered around the slim first stage. His *Zemlya* spacecraft was fixed to the top of the Proton, shrouded by a cone of white-painted metal. White condensation poured off the rocket, rolling down its heroic flanks; and ice glinted on the metal, regardless of the warmth of the sun.

At the base of the rocket, Leonov and Korolev waited for him.

Alexei Arkhipovich Leonov was dressed in his formal uniform as an Air Force Lieutenant-Colonel, and Gagarin saluted his superior officer. "I have been made ready, and now I am reporting that I am ready to fly the *Zemlya* mission," he said.

Leonov, stocky and muscular, grinned at Gagarin and clapped him on the shoulder. "Yuri," he said. "It is a fine day."

"Yes," Gagarin said. "It is a fine day to fly." Leonov had been Gagarin's double, his backup on this mission. Leonov's day would come next year, when he would walk in space from a two-man Voskhod craft.

Sergei Pavlovich Korolev, the Chief Designer, stepped forward to Gagarin. Korolev's eyes burned with energy. But he was stooped, and his skin looked paper-thin; he was an old man, swathed in his heavy overcoat. He said, "I wish you a pleasant flight, a fine landing, and a safe return to Earth."

Gagarin looked down over the small group of men gathered in the amphitheater-like flame pit. He said, "The whole of my life seems to be condensed into this one wonderful moment. Everything that I have been, everything I have achieved, was for this." He lowered his head briefly. "I know I may never see the Earth again, my wife and my fine children, Yelena and Galya. Yet I am happy. Who would not be? To take part in new discoveries, to be the first to journey beyond the embrace of Earth. Who could dream of more?"

He turned, and climbed into the elevator which would lift him to the capsule.

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Complex emotions coursed through Alexei Arkhipovich Leonov: awe, envy, pity, love. "Your courage is not in question, Yuri," he said softly. He watched until Gagarin had risen into rocket vapor.

The heat of the young, strengthening sun scattered the last of the primordial interplanetary dust.

Light broke over Venus.

The planet's surface was cooling. A thin crust hardened over molten, churning rock.

Unlike Earth, there were no distinct tectonic plates here, no fault lines. Rather, vulcanism continued everywhere, as the radioactive heat of the interior poured out into space. The new land was tortured into huge igneous structures: spider-web patterns of cracks hundreds of kilometers across, collapsed volcanic domes, a mountain range that swept halfway around the planet.

Outgassed water vapor cooled and condensed. Droplets of liquid water trickled down to fill the lowlands and impact basins.

Seas gathered. A clear nitrogen atmosphere mantled around Venus.

Energy poured into the atmosphere from many sources: the sun's ultraviolet light and particle wind, the flash and crackle of lightning, auroral electrons, interior radioactivity, the shock waves of falling planetesimals.

All these sources fabricated organic molecules, which rained into the seas.

In the deep new oceans, life swarmed, half a billion years before its first stirring on Earth.

But the young sun grew hotter and brighter, still seeking its ultimate Main Sequence stability.

Zemlya's protective shroud cracked open. Sunlight flooded Gagarin's cabin. Fragments of ice, shaken free of the hull, glittered around the craft like snow.

Zemlya swiveled in space. Gagarin saw the skin of Earth, spread out beneath him like a glowing carpet, as bright as a tropical sky.

Gagarin smiled. The frustration of three years of speeches and tape-cutting ceremonials fell from him; at last he was flying again.

He traveled through a single orbit of the Earth. There were clouds piled thickly around the equator, reaching up to him. The continents on Earth's night side were outlined, thrillingly, by chains of city lights. Over central Africa there was a flash of lightning, somewhere beneath the clouds, like a light bulb exploding under cotton wool.

Where he passed, he relayed revolutionary messages. "Warm greetings from space to the glorious Leninist Young Communist League," he said. "Everything that is good in me I owe to our Communist Party and the Young Communist League. This date is one on which mankind's most

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cherished dreams come true, and also marks the triumph of Soviet science and technology."

When he flew once more over the baked-clay heart of the Soviet Union, the control center told him he should prepare for the ignition of his last rocket stage: the Block-D, his interplanetary engine.

It turned out to be another twelve-hour day for Sergei Pavlovich Korolev.

From the launch, he was driven home to his apartment in Moscow by chauffeured limousine. The KGB guards outside his door nodded to him. Korolev glared back. They wore the same color uniform as his guards at the Kolyma gold mine, the Gulag charnel house where he had endured a year's hard labor after being caught up in one of Stalin's purges against suspected Bonapartists.

But now, of course, these men were here to protect him from the world, rather than the other way round.

Nina, his wife, came to the door to greet him, with a glass of hot tea. As they always did, they sat at the foot of the stairs, and discussed the day's events. Korolev described to her the latest budgetary conflicts, the equipment failures, the scarcity of resource, the low quality of equipment and men available.

And they talked of Gagarin.

Korolev was only fifty-eight. But his health was failing, he knew. The years he had spent in labor camps and prison had damaged him fundamentally. He did not know how long his determination could continue to fuel his weakening body.

Korolev knew that his own name was unknown in the greater world beyond the Soviet Union: even after all these years, all these triumphs. And that web of obsessive secrecy had gathered itself, too, around the new Gagarin flight.

But the motives, the secrecy, even the past—none of it mattered. The spacecraft, his robust little Vostoks, embodied the dream of Korolev's life.

But what Gagarin was attempting now was astounding, beyond even Korolev's imagination. As he sat with his wife, he thought of that brave aviator, that delicate construct of human flesh and blood and bone, in the metal carapace Korolev had built for him.

As the sun brightened, water evaporated into the atmosphere of Venus, trapping heat. The oceans shallowed rapidly. Life was forced onto the chaotic, encroaching continents, and an explosion of species sought to find a means of survival.

A hectic intelligence emerged.

It was forced immediately into a brutal technological race. Living creatures burrowed into the ground, building complex shelters, hoarding water, fending off the heat.

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The abandoned surface died. The seas boiled, pouring water vapor and carbon dioxide into the air.

There was a final dawn, a last sunset. Then the clouds hid the stars.

At last even the carbonate rocks of the sea beds disintegrated, releasing still more carbon dioxide. The last water vapor was driven out of the air, leaving Venus scorched and dry.

The sun ceased to evolve—pumping twice as much sunlight over Venus as was incident over Earth—and Venus achieved a sterile stability.

Vulcanism continued, and no part of the land was allowed to grow old. The volcanoes coughed sulfur dioxide, and the clouds turned to acid. The lower levels of the air were like a lethal ocean, dense and sluggish.

The last of the planet's life burrowed deeper into rock.

Zemlya—Earth—was, like the proposed Voskhod, a derivative of Korolev's successful one-man Vostok spaceship.

Zemlya consisted of two modules. The entry module was a sphere three meters wide. Its hull was coated with a thick ablative heatshield, and strips of metal foil that would reflect the sun's fierce heat.

The instrument module—fixed to the base of the sphere by tensioning bands—looked like two pie dishes welded together. It bristled with thermal radiation louvers. Once in space, large solar-cell wings had unfolded from its walls. The module was crammed with water, tanks of oxygen and nitrogen, and chemical air scrubbers.

The instrument module omitted the big TDU-1 retrorocket system used to return a Vostok from Earth orbit. Gagarin had no need of a reentry rocket, for his sphere would be flung directly into the atmosphere of Venus. The walls of his entry module contained the flotation collar that would enable the craft, after its descent, to float on the sluggish surface of Venus's world-girdling oceans—those seas of carbonated water, or perhaps of oil—while he awaited the arrival of further Soviet supply ships, and eventual rescue by future cosmonauts in more advanced craft, yet to be specified by the Korolev Design Bureau.

Gagarin's cabin was a cozy nest, lined with green fabric. His couch occupied much of the space in the cabin. Behind his head there was an escape hatch, and there were three small viewing ports recessed into the walls of the cabin.

Gagarin tested his manual control system in pitch, yaw, and roll, using the hand controller to his right. The craft was turned about its center of mass by steering jets fed from compressed gas storage bottles. He monitored the usage of fuel, which was satisfactory. He checked the response of the craft using a stop-watch and his *Vzor* optical orientation device, a system of mirrors and optical lattices mounted in a porthole before him, which would enable him to navigate across the solar system.

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Gagarin drifted out of his couch and exercised; he had been given an ingenious regime based on rubber strips, which he could perform without doffing his pressure suit. He monitored his pulse, respiration, appetite and sensations of weightlessness; he transmitted electrocardiograms, pneumograms, electroencephalograms, skin-galvanic measurements, and electro-oculograms, made by placing tiny silver electrodes at the corners of his eyes. He recorded his observations in a log-book and on tape. He washed, opening up zippered panels in his pressure suit, for there was no room to discard the suit entirely.

In his windows he saw how Earth receded rapidly, folding over on itself. Gagarin exclaimed ecstatically. He was the first man in all of history to observe the Earth from without, complete and entire. It looked beautiful and fragile, an ornament against the black void, and he tried to convey some of this to the ground.

In the abandoned valleys of Venus, the temperature passed the boiling points of many metals, and exotic chemistry began.

The turgid atmosphere was stained by complex compounds, boiled out of the rocks: salts, metal halides, chalcogenides. The vapors were transported into the higher, cooler air, and salt crystals—cubes and whiskers—accreted out over the cooler uplands. The crystals, sprouting over millions of years, dug into rock cracks and broke open the surface like a salty frost, leaving a fractured, gleaming rubble.

The mountain tops of Venus shone, as if painted with metal.

The compounds deposited included antimony sulfoiodide, tungsten trioxide, germanium telluride and cesium germanium chloride. These were ferroelectrics, capable of passing electric currents and storing bits of magnetic polarization.

A natural electrical network was growing over the mountain tops of Venus. Charges flowed in complex, unpredictable patterns.

In response to external stimuli—storms, the punching impacts of the last planetesimals—patterns of magnetic polarization were laid down, and modified.

Nikita Sergeyevich Khrushchev stood behind his desk, and glowered at Korolev. "Listen to me," he shouted. "You will complete this Voskhod, Chief Designer. You will launch it on time."

Korolev tried to control the weary shaking in his legs. "Comrade Khrushchev. I am trying to explain. We are behind schedule. Our resources have been devoted to the *Zemlya* project."

Khrushchev's mood switched, as it so often did, to a sly bullying. He waggled a fat finger in Korolev's face. "You do not deceive me, Sergei Pavlovich, and you should not attempt it. I know you hoped that this *Zemlya* flight might be sufficient to buy me off. Let us sacrifice one man,

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one brave man, in this reckless jaunt to Venus, and proceed with our *real* work. Yes? But it will not do, Sergei Pavlovich. It will not do!"

Korolev regarded Khrushchev with disgust. Khrushchev's peasant ignorance was so great, Korolev suspected bitterly, that he understood nothing, truly, of where these men, the cosmonauts, were going. Perhaps Khrushchev thought the six Vostoks had landed on some ledge in the sky, above the flat Earth.

Korolev had delivered the systems that had launched the first satellite, and Gagarin, the first man in space, satisfactorily ahead of the Americans. And now Korolev was reaching out to another world, to Venus.

But for Khrushchev it was never enough.

Korolev feared for the future of his programs.

"Comrade Khrushchev," he said now. "Perhaps you do not understand. Here is how I must do this thing, this stunt. I have only the Vostok, which is a one-man ship. To fit in two or three men, I must remove the ejection seat, and eliminate the reserve parachute. The ship will sustain a single day in space. I must add a solid-fuel rocket to the base to make the landing survivable. There will be no launch escape system. If I carry three men, I cannot even give them pressure suits. Each launch is a terrible risk, without engineering or scientific justification. And—"

"I care nothing for your justifications! I cannot wait the several years until your wonder ship, the Soyuz, is ready to fly out of its paper nest. Not while the Americans make ready to fly their Gemini. I need results, Sergei Pavlovich!"

Khrushchev started to thump the desk with his fist.

Gagarin studied Venus through his *Vzor* telescope. The face of the planet was brilliant white, the clouds shining in the light of the nearing sun. The grey shading seemed to deepen at the planet's limb, giving the globe a three-dimensional effect, a marked roundness. Venus was a little round pearl, utterly featureless.

To Gagarin, it was clear that the planet was a blank, on which the mind of man could project its desires; the reality lay beneath the clouds, undiscovered, waiting for him.

The receding Earth took on the appearance of a remote cave: warm, well-lit, but an isolated speck on a black, hostile hillside. In the blue mouth of the cave, he saw the faces of his wife and daughters turned up to him, diminishing, becoming ever less important.

But now Gagarin had ventured far outside the cave.

The padded walls of his cabin were just centimeters from his gloved fingers. Beyond that, there was *nothing,* for millions of kilometers. When he closed his eyes he saw flashes of light, meteoric streaks sometimes, against the darkness. He knew this must be some radiation effect, per-

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haps the debris of exploded stars coursing through him. His soft human flesh was being remade, shaped anew.

In his uneasy sleep, he receded to his own oceanic past, his childhood. He saw again the German tanks moving past the wooden houses of his home town of Klushino, heard the planes of the Soviet Air Force droning overhead.

Drifting between sleep and wakefulness as between worlds, Gagarin sang hymns to the motherland.

The flickerings of intelligence would not be extinguished.

In a final, desperate gamble, the last sentient minds enfolded themselves in the ferroelectric caps of the mountains, storing themselves in the complex crystal lattices there.

The deepest shelters collapsed under the ferocious weight of the atmosphere. The organic molecules of the last corpses coagulated in the oven heat.

But a new, chthonic awareness dawned across the planet.

It probed out with subtle electromagnetic senses. It dug into the heart of the rocky world whose skin it infested, and felt the mass of its heavy nickel-iron core. It reached out to the sun, the giant fusing ball that tugged the planet on closed paths around its equator. It sensed other worlds: the huge, homogenous gas spheres on the rim of the solar system, and the rocky worlds closer to the sun, which moved with jewel-like precision around their miniature orbits.

And, as a human's eye may be caught by the flight of a bird, the iron mass of Earth's core tugged at the electromagnetic senses of the new chthonic mind.

Leonov stormed into Korolev's office. He had a document with him, a glossy booklet; he threw it down on Korolev's desk. "What is this, Chief Designer?"

Korolev put aside his pen and picked up the booklet. It was in English, evidently a publication of the United States Information Service. It was full of large type, simple trajectory diagrams, and artists' representations of a desolate, baked landscape; its cover bore an image of a fragile, boxy craft with solar-panel wings sailing past a cloudy world.

Leonov paced, magnificent and awesome in his Air Force uniform.

"I cannot read English," Korolev said.

"The pictures are sufficient, are they not, Sergei Pavlovich? This is an account of *Mariner 2*. An American spacecraft, unmanned, which flew past Venus in 1962."

"How did you get this?"

"From an American, who met Gagarin in Paris last year. It does not matter." Leonov leaned forward, with his massive fists resting on Korolev's desk. "And what did this American probe tell us of Venus? Did it

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detect the lush jungles, the seas of water, the lakes of oil of which our scientists speak?"

Korolev sighed. "It found a desert. Baked hard. An atmosphere a hundred kilometers thick, of carbon dioxide, exerting a pressure scores of times that of the Earth. And temperatures of hundreds of degrees."

"There is no water, no oxygen?"

"None."

Leonov thumped the desk. "Then how will Yuri survive, damn you? Is his capsule strong enough to resist such pressures?"

Korolev shrugged. "It is possible. It is not easy to send a craft with a submarine's hull all the way to Venus, Alexei Arkhipovich. Even with our new Proton, the weight penalties . . ."

Some of the anger seemed to drain out of Leonov. He sat down, opposite Korolev. "Sergei Pavlovich, why *Zemlya?*"

"Because the Americans are going to Mars," Korolev said simply. "They intend to send two new *Mariner* craft there this year. We know that we cannot compete with the Americans' delicate electronics. We must, for now, concede Mars."

Leonov did not look shocked at this admission of weakness. "And Venus?"

"We must play to our strengths, Alexei Arkhipovich. We are still in advance of the Americans in our ability to loft heavy masses to orbit, and beyond. It will take a massive, plated craft to penetrate the air of Venus and set down on its surface." Korolev smiled. "Venus is a Soviet planet, Alexei Arkhipovich. Dour, heavy, difficult, responding only to brute force. But we have that force."

Although, he thought, we have already launched seven unmanned probes to Venus, all of which failed.

"Must we send a man?" Leonov demanded.

"Ah, but if he should succeed, Alexei Arkhipovich. If he should succeed! It would be a cosmic victory over the United States, a feat that would resound through the ages."

"And if he dies? If Yuri sails past Venus in his misdirected ship, or falls to his death on those rocky plains? What then?"

Korolev tapped a brown-card file on his desk. "We have plans. We will say that the ship was a Zond. A mere unmanned craft, an experiment."

"And Yuri?"

"We will wait a decent interval—until 1967, or 1968. Yuri will disappear into training, perhaps for my new Soyuz program. And he will be lost, before he journeys into space again. Perhaps he will fall to Earth in his beloved MiG-15." Holding Leonov's gaze, Korolev caressed the file. "It is all here, Alexei Arkhipovich. We have prepared. It has been done before. Future generations will read in their reference books of Zond 1, and of the MiG-15 that fell into the birch forest. No one will know of *Zemlya.*"

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Leonov balled up the American leaflet and threw it across the room. "Chief Designer, these webs of deception shame you. There is no difference between Comrade Khrushchev and his politics, and you and your rockets. You are mirror images, driven by your twin ambitions, your pride and folly."

Korolev was stung. "You should be cautious in your remarks, Alexei. You know little of my past."

"You sent Gagarin to this planet, this hell-hole, *knowing* what the Americans had learned of conditions on its surface."

"I know what the Americans claim. But this *Mariner* is only a single probe, which flew by a *world,* in mere hours. How can we rely on its data? Perhaps your jungles and oil lakes are there after all, Alexei Arkhipovich. How can we know? Is it not worth risking a life, one life, to determine such a thing?"

"No, it is not, and you do not think so either, Chief Designer."

"Perhaps. But he knew," Korolev said softly.

"Yuri?"

"Yuri *knew,* of this *Mariner* data. And yet he traveled anyway, Alexei Arkhipovich."

Leonov stared at him for long seconds. Then he dropped his head to his hands. "As would I," he murmured. "As would I, of course."

"I know it, Alexei Arkhipovich."

Earth was intriguing.

It was the same mass as Venus, and roughly the same composition, yet—because of its greater distance from the sun—its nature was very different.

A thin layer of nitrogen and oxygen coated its surface, and liquid water was stable there. A weak, complex, evanescent life shimmered within that blue film.

Then there was a change, quite sudden. Metal packets were hurled beyond the transparent air of Earth, to fall back again. Electromagnetic energy—perhaps signals, perhaps probes—pulsed across space, touching even Venus.

Something analogous to curiosity stirred in the planet-wide mind.

More metal packets came limping, on minimum-energy transfer paths, toward Venus. They fell back to Earth, or missed Venus by thousands of times the planet's diameter.

But now a new packet, more massive than the others, climbed out of the dimple of Earth's gravity well. Perhaps this would reach its goal.

The chthonic awareness waited through the flicker of geologic time it would require for the metal packet to complete its transit.

Zemlya plunged into the sunlit face of Venus.

At the ship's portholes Gagarin saw flames, at first filmy, and then

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thickening into intense fire. The ablative coating of the sphere was burning away, carrying off the deadly heat.

Four hundred kilometers above the ground, he felt the first caress of weight.

The acceleration mounted on his chest. It reached six, seven, eight times gravity. It was much more painful than at the launch; during the long flight his sturdy body had become etiolated.

There was a surge—a peak in the acceleration that made him grunt—and then, for a moment, the pressure subsided. Under automatic control, *Zemlya* was shifting its center of gravity, skipping across the top of the atmosphere like a stone over an ocean. By this means *Zemlya* would extend its entry, shedding its hyperbolic velocity without subjecting Gagarin to crushing deceleration.

It was, he thought, a marvelous design.

The ship plunged more directly into the air. The pink, fiery glow faded.

He heard a bang, above his head. That was the opening of the parachute compartment. And a lid on the outside hull blew off, to expose atmospheric sensors.

Gagarin, inside his charred sphere, gazed out at the air of Venus.

Zemlya was bathed in a yellow glow, that brightened and darkened periodically. The capsule was spinning under its parachute, and so that cyclical brightening must be the sun, reduced to a glare behind a diffuse haze.

Suddenly the haze thinned out, and the visibility extended. Gagarin found himself looking down on a layer of cloud, thick and unbroken, a pale, washed-out yellow. The clouds were fluffy, Earthlike.

Zemlya dropped through the clouds.

And then, suddenly, he saw the surface, dimly visible through the murky air.

Gagarin made out a ridge, hundreds of kilometers long, leading up to a plateau. To his right, shadowy cones loomed. They were mountains, perhaps volcanoes. *Zemlya* was drifting toward the mountains, he saw, floating like a fat metal balloon in some sluggish current.

The mountain peaks shone, as if their summits were coated with layers of glass, sharply delineated.

It was a desolate, baked landscape. Despite himself, Gagarin felt a sharp stab of disappointment that the Americans had been proven correct, after all. There were no oceans here, of carbonated water or of oil. But Gagarin felt no fear; Korolev's hull would protect him.

Zemlya was heading for the rough summit of one of the peaks. It was broken up with large, jagged rocks. He saw some evidence of winds: dust streaks, scouring, flattened dunes.

The ground rocked upwards, spinning toward him.

The landing was hard and loud. At the impact, Gagarin groaned.

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Zemlya, downed, settled a little on its left side. The hull creaked.

Gagarin lifted his heavy head, and peered through his windows.

The light was dark, reddish, but no worse than an overcast day on Earth. He could not see the sun at all; there was only an ill-defined glare, almost baleful, spread across half of the cloud bank that covered the sky.

The ground on which *Zemlya* rested looked like clay that had been baked, carelessly, in an oven that was set too high: it was cracked, fractured. The light was strong enough for some of the rocks to cast a sharp shadow. His orange chute had come down close to the capsule, and was spread over the rocks.

Crystals of some salt littered the ground; they bristled from every crack in the rock, aggressive, complex, like tiny antennae.

The hull emitted a metallic groan.

Gagarin lay back in his couch, resting his strained neck.

Perhaps some day a future cosmonaut—in a spaceship built like a tank—would find the remnant of his *Zemlya,* flattened as if by a great footfall, and wonder at the foolishness of the human who had ventured here in such a fashion: his foolishness, and valor. Gagarin grinned. They would erect a statue to him, a hundred kilometers high, and his name would live forever!

The cabin grew dark.

The salt crystals had grown up around the ship, like a forest of glass. They were impossibly long, and they probed at the scorched windows like fingers.

Behind Gagarin's head, there was a noise like a hammer blow.

He turned. The escape hatch had buckled.

The cabin imploded.

A hail of crystal light whirled in, enfolding Gagarin.

Salt crystals drizzled out of the air, depositing layers of ferroelectrics over the wreckage of Zemlya. *Geologic perceptions millions of years deep were adjusted, absorbing the new material.*

It was a new stimulus, this notion of reaching out physically to the sister planets. Intriguing.

Tentative plans were made.

Leonov listened to Gagarin's recorded voice.

The present generation will witness how the free and conscious labor of the people of the new socialist society turns even the most daring of mankind's dreams into reality. To reach into space is a historical process that mankind is carrying out in accordance with the laws of natural development. . . .

"Did he know that no one could hear him?"

Korolev said nothing.

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"Must we do this, Chief Designer? Must we proceed, forever, onward into space?"

"Yuri thought we must;" Korolev said.

"Yes," Leonov said. "Yuri believed it all. Everything they would have us say, about the triumph of socialism leading us to the stars, where our transforming destiny awaits. He believed it. It is why he was a hero. Why we loved him."

"And perhaps," Korolev mused, "he was right. Perhaps despite ourselves we will reach through, beyond the rockets and the politics and the rhetoric, to a new reality. Perhaps we will be transformed. Is that possible, Alexei Arkhipovich?"

Leonov shivered.

Before him, glowing like the mouth of a crowded cave, lay the blue Earth. He sensed the compact mass of the planet's iron core, studied the thin film of life that coated its surface.

The subtle shadows of the glittering, crystalline ships from Venus crossed the crowded lands, the oceans, the shrinking caps of ice.

He imagined the alarms clamoring across the planet, the lids of aging missile silos gaping open, the huge nuclear submarines breaking the surface of the seas. Already, the first sparks were climbing up toward him, like wasps threatening an elephant.

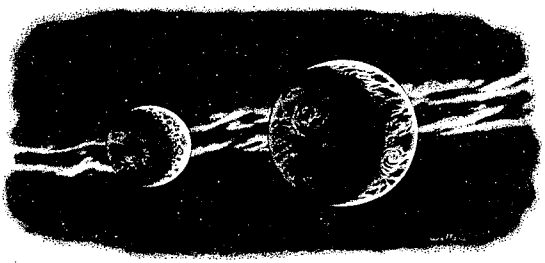
He reached out a hand, and those small lights died.

On the evanescent surface of Earth, human generations had worn away.

Artifacts orbited the planet, looking inward; but no longer did humans travel beyond the air, or send their complex metal packets to other worlds. With the deaths of Korolev and Leonov, something else had died, he saw.

But now, all over the planet, there were faces turned up to him, as steppe flowers turn to the sun. Faces shining with awe.

Yuri Gagarin smiled on them all. He descended, on crystalline pillars of light. ●



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Robert R. Chase

THE FIGURE OF DROSSELMEYER

Robert R. Chase's first novel, *The Game of Fox and Lion,* was a finalist for the Compton Cook award. He has since published *Shapers* and *Crucible,* and he is at work on a new book, *Shatter the Sky.* Mr. Chase tells us "The Figure of Drosselmeyer," which is his first tale for *Asimov's,* is "a departure in both style and content from my earlier stories [most of which appeared in *Analog*]. My inspiration in the past has been the works of Poul Anderson and Larry Niven; the guiding spirit of the current tale is Robert Aickman." The Chase Home Page (established without permission by his son) is at http://www.mbhs.edu/~dchase/rchase.html.

Illustration by Darryl Elliott

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Dear Uncle Anton,

Mother has been reminding me lately how much we owe to you (and not just for bankrolling my time here at your old *alma mater,* Ignatius) so I thought I should write to let you know how my education is progressing. As you probably know, Mother is worried because I have not yet declared a major. Last year, I quoted you to the effect that college is the time for becoming educated; one can always become a technician in graduate school. Now, more than choosing a major, I have learned what I am to do with my life.

It started—well, as I have discovered, it started a *long* time ago. I began to understand my own part only a few months ago. I was attending the conservatory's fall production of *La Cenerentola.* Dave Higgins, a friend of mine from last year, was singing the lead as Don Ramiro, Prince of Salerno, and had given me a ticket. I might have gone anyway, to see the opera which, for obvious reasons, has always been Mother's favorite.

Halfway through the first act, I found myself focusing on Alidoro. Not on Wallace Jenkins, the voice professor playing the role, but on the character itself. Alidoro is listed ambiguously on the playbill as Court Philosopher. More importantly to the plot, he is the friend and tutor of Don Ramiro. While in disguise, he observes Cinderella taking abuse from her stepmother and stepsisters, and resolves to set things right. That is, he plays the role of fairy godmother even though all traces of magic have been repressed in this version.

I had encountered Alidoro elsewhere, in some other guise. There was a memory lurking at the back of my mind, needing only a magic word to call it forth.

I might never have found that word had it been any other time of the year. After congratulating Dave at the cast's opening night party, I walked back to my dormitory. A light snow fell, haloing the street lamps in gently changing patterns. I stopped in the entryway to make sure I had stamped and scraped most of the snow from my shoes. The common room just beyond was empty. However, the television was playing in the darkened room. PBS was showing the Baryshnikov *Nutcracker.* Clara and the Nutcracker Prince were dancing together in the foreground, but it was a figure in the background that caught my attention. He was dressed in a dark frock coat whose somber colors set him apart from the rest of the gaily dressed cast.

Drosselmeyer.

Alidoro was Drosselmeyer.

In my imagination, you and my father are both frowning at me. My father asks for evidence. You deride the idea as a fancy without proof. But when you see a photograph in an old family album, you don't prove that

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the young lady with the devilish smile is your grandmother. You simply recognize her. Nor do you prove the sudden appearance of "Streets of Laredo" when listening to a Copland ballet.

I had neither proof nor, really, evidence. Nonetheless I was sure. The question was, what was I going to do about it? And why was I so sure that something needed doing?

My subconscious has an agenda which is only sometimes what I think it should be. I may file a problem away as insoluble, but days later a solution will present itself to me, the fruit of meticulous labor of which I was almost completely unaware.

That night, I slept lightly, floating just below the surface of wakefulness. Again, I walked into the dormitory and watched *The Nutcracker*. This time I was watching an earlier scene, the party at which Drosselmeyer opens the box containing the mechanical dolls. Only I was part of the party, and it was being held in my own house. You had just arrived from a meeting at MIT, and were saying things that made Mother and Father laugh about people named Minsky and Drexler.

I was sitting on the floor, contentedly playing with the erector set you had given me the year before. After talking to my parents for a few minutes, you turned to me and, with a flourish, produced three mechanical mice, Frank and Russell and Eric. They were polished steel hemispheres on battery-powered wheels that had been constructed as part of an undergraduate project.

You set them on the floor and they took off in all directions, tails lashing madly. They brushed against walls with their stiff metal whiskers, bumped into tables, chairs, and feet, and abruptly reversed directions.

Once they came together in such a way that all three tails tangled. The more they tried to get away, the tighter the knot became.

(I wonder now if coincidence or programming turned them into a Rat King. Not the costumed, saber-waving foe of the Nutcracker, but a version of the actual conglomerate creatures which once lived in the vermin-infested cities of Europe: scores of rats held together at their tails by encrusted filth.)

In my dream, I laughed and laughed at their antics. I woke happier than I can remember being in ages.

I made an appointment to see my advisor, Fr. Dougherty. As I entered his basement office in the Marquette building, he was clearing his throat, a rumbling of phlegm of volcanic proportions. He furrowed his brow, his eyes wandering wildly among the bookshelves of his shadow-lined office.

"So you want my approval," he began, enunciating the words separately, as if taking down jars of preserves for examination and setting them back on their shelves, "for your proposed interdisciplinary course of

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study. In which you intend to prove that Don Alidoro and Drosselmeyer are one."

"No," I said, "not exactly. What I want to show is that both characters were drawn from the same source. My theory is that it must have been an individual who was at least moderately famous or infamous in European society of the eighteenth century. I want to determine who it was."

Fr. Dougherty pressed his glasses into his forehead with his thumb as he bent over my proposal paper. "And you think this hypothetical personage was also the inspiration for Don Alfonso in Mozart's *Così fan tutte.*"

I nodded, aware that this was sounding increasingly tenuous. "It seems likely," I asserted.

A wild smile played at the corners of my advisor's mouth. "Are there others?" he asked.

I licked my lips. "Both Dr. Miracle and Dapertutto the sorcerer, in Offenbach's *Tales of Hoffmann,* appear worthy of investigation."

Fr. Dougherty's face was screwed up in an agony of concentration. "Doesn't it seem to you the least bit unlikely that this hypothecated individual would be known to Mozart and Rossini, Tchaikovsky, and Offenbach, when they were separated by most of a century and most of a continent?"

I shook my head. "They may have known of the Magus directly, but it is not necessary. What is necessary is that their librettists, or the sources their librettists used, knew of him."

That was the first time I used that term for my quarry. Fr. Dougherty's eyelid flapped at the word, but he made no direct reference to it. Instead he asked: "How good is your Russian?" I stared at him dumbly. "How about your Italian, then?" he insisted. "Your French? Your German?"

"My French is more than adequate," I replied. "German . . . was difficult. . . ."

"And you have no fluency at all in the other two." Fr. Dougherty breathed a long, gusty Cave of the Winds sigh.

For a moment, I despaired. Not simply because he was going to disapprove my request, but because the logic that led him to that conclusion seemed inescapable. It was a hopeless task even if my quarry were not a chimera.

Fr. Dougherty fixed me with fierce gaze. "Temptations are to be resisted, so that character may be strengthened by the exercise. Sometimes, though, the best thing to do with certain obsessions is to give in to them quickly, put them behind you, and get on with life. Mind you, that is my own opinion, and in no way the official Church position."

"I understand, sir," I said, completely bewildered.

"You may proceed with your research if you look for the source of an ar-

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chetype rather than restrict yourself to an actual person. That way, you have at least a possibility of success. However, you will have to provide me a full report every month. If it appears you are not making sufficient progress, my approval will be withdrawn."

The first week was a rollercoaster. As Dougherty had predicted, the venture nearly foundered on language barriers. I located language majors in the areas I needed who were taking computer courses to fulfill their science requirements. For some liberal arts types, computers are impenetrable masses of circuits, motivated only by malice. We bartered my skill in programming for their translation services.

"You play that keyboard like a piano," one of them said wonderingly.

"I had a good piano teacher," I replied.

My talents with computers helped in another way. I combed through the Internet user groups and sent out information queries. More than a hundred replies came back. This sort of research has its dangers, though. One of the longest replies came from a joker who fabricated more than twenty pages of totally bogus references. I discovered the fraud the day before my first progress report was due. I stayed up all night purging the fictions from my pages. The resultant report was a good deal shorter and more tentative than the original draft had been. I dreaded Fr. Dougherty's reaction.

To my surprise, he just grunted something about the dangers of letting unknown third parties do one's research. And that he expected to see more progress next time.

I had to find my way out of other blind alleys before then. Tchaikovsky's scenario had been the product of the director of the Imperial Theater, Ivan Alexandrovitch Vsevolojsky, and his choreographer, Marius Petipa. They, in turn, had drawn on Dumas *père*'s *Nutcracker of Nuremberg*. But the real source of the story was E.T.A. Hoffmann's *The Nutcracker and the Mouse King,* written in 1816. Hoffman's Drosselmeyer, with his eye-patch and outlandish clothing, was unlike the urbane figure in the Baryshnikov version of Tchaikovsky's ballet, but he was clearly the inspiration.

Things began to connect. Hoffmann had been Offenbach's acknowledged inspiration. And Hoffmann had been a near-contemporary of Mozart, an ardent admirer of his work, in fact, writing in his language just a few years after the composer's mysterious death.

So, the Magus had probably been in Austria around 1790 or earlier. Now all I had to do was connect him to Rossini. And give him a name.

Despite all cybernetic wonders, there were still sources that were too obscure to have made it onto CD-ROM or Internet. The university library held a surprising number of these, so I became well-known to the library staff as I sifted through my "quaint and curious volumes of forgotten lore."

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* * *

One evening, as I returned from my carrel to turn in my latest load of journals, I came across a librarian named Alldraper. He had propped up a nearly full-length portrait against the check-out desk, and was dusting, clucking his tongue as he examined it.

I deposited my armful of journals on the desk and came around to look. Although faded with age, the portrait was still striking. I was looking at a Jesuit who appeared to be in his early forties. A trimmed and pointed beard gave him an elegant appearance despite the patch over his left eye.

"One of the founders?" I asked.

Alldraper favored me with a sly smile. He must have been nearly sixty years old. His white hair had retreated into a pronounced widow's peak, but he moved with the litheness and exaggerated definition of a dancer.

"No, but certainly one of our most controversial early faculty members. Do you remember how the portrait of Richard Nixon was taken down from the Duke Law School moot court room during the Watergate period? Well, Fr. Anthony's portrait has been in hiding for a far longer period. I came across it by accident a few weeks ago. Right now, I'm wondering how the President of the College would feel if this were put on display in one of the main reading rooms."

I studied the portrait, struck by a feeling of familiarity almost as strong as when I had attended *La Cenerentola*. "There was a scandal?" I asked.

"After all these years, it is hard to be certain of even that much," Alldraper replied. "Fr. Anthony joined the faculty soon after Ignatius was founded. He organized the science department, taught Latin and Greek, and also lectured on scholastic theology. If the old diaries I have read are any indication, he was a very popular and effective teacher. He seems to have spent as much time talking about Albertus Magnus as about his more famous student Thomas Aquinas. One student wrote that he felt like he had been invited into the old wizard's study by his door-opening automaton."

"Wizard?" I raised an eyebrow.

"By popular repute at least," Alldraper said, shrugging. "And founder of modern science. And doctor of the Church. You are familiar with Chesterton's remark that while historians used to believe that the medieval Church persecuted all scientists as wizards, in fact nearly the opposite was true?"

Well, I was now. "How did Fr. Anthony get in trouble?" I asked.

"That is something I have never been able to pin down. Perhaps rumors started because his interest in Albertus was considered the sign of a morbid propensity for the occult. Or it may have had its roots in simple anti-Catholicism. You look incredulous, thinking that nothing could be more American than, say, Notre Dame. That was not always the common

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opinion. The Washington Monument was being built during the time about which I am speaking. Foreign countries donated blocks of granite to be used in the construction. When it was learned that one of these blocks had been donated by the Vatican, an enraged mob dumped it in the Potomac.

"Or it may have been something such as his foreign associations earning the distrust of the chauvinistic locals. Fr. Anthony seems to have had correspondents in half the capitals of Europe, as well as a surprising number in Asia and South America as well.

"In any event, the most absurd rumors began to circulate. Some dealt with his eyepatch, how he had received it, what really lay beneath it. Others suggested that his health was too good, that rather than age, he appeared to grow younger.

"There were suggestions from the Chancellor that relations with the county should be improved. Letters went to the Father General, an informal inquiry was held. Fr. Anthony suddenly ceased being mentioned in the college records, and his portrait went into storage."

I excused myself, saying that there was some more research that I had to do that evening. The nearest catalog terminal was across the room. I gambled that the library would have a copy of a volume I had first seen on my father's bookshelves. Sure enough, the *Pantheon History of Magic* was part of the library and had not been checked out. I wandered down a level, into a section of the stacks new to me.

The book was right where it belonged. But when I turned to the listed page, the picture I was looking for was missing. I checked back with the table of illustrations. I should have the right page. I looked more closely.

The page had been razored out so carefully and so near the binding that the marks were nearly imperceptible. The surrounding text was intact, however. I read the three page chapter on the Comte St. Germaine thoughtfully, and then replaced the volume on the shelf.

The pile of books and magazines, photocopies and translators' notes outgrew my carrel. I moved them to one of the long library tables and, with the help of a notebook computer, endeavored to bring them into order.

"Tony! So you haven't dropped out after all. It's been ages since anyone has seen you."

"Oh. I'm sorry . . . Marie." I know it sounds corny, but her hair really was like spun gold, coiled into shimmering ringlets. Mother tells me that when she was in college, girls used to iron curls out of their hair because straight hair was "more sincere." At least my generation has moved up a couple of notches in intelligence from that.

"If you don't make an appearance in biology class, you will flunk out," she warned, graciously ignoring the fact that I had had to flounder for her name.

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"Yeah. I guess I've just been busy." I waved my hands at the mound of paper. "I've been working on an interdisciplinary research project, and it may have gotten out of hand."

Marie lifted up one of the magazines, setting off a mini-landslide. "It must be fascinating," she suggested.

Since she seemed interested, I tried explaining something of what I was trying to prove. I must have been less than coherent, because when I finally came to describe what had started me on this project, Marie interrupted.

"Not Alidoro. Polydori."

"Excuse me?"

"Your Magus. The one who is always making automatons or mechanical dolls or other sorts of artificial life. You've just mixed up his name. Polydori was a friend of Byron and the Shelleys. He was involved in that ghost story contest which led to the creation of *Frankenstein*."

"How do you know all this?" I asked.

"I have to study Mary Shelley for my Figures in Feminism course."

We got everything straightened out, eventually. By then, though, I was late for my meeting with Fr. Dougherty. I shuffled my notes into hasty order and prepared to leave.

Marie laid a hand on my arm. "Don't let this project . . . consume you. You still have to pass biology and your other classes as well. And you need some time for yourself."

I smiled. "I have plenty of time for myself."

She shook her head. "That is not true. You hide in your work. It's a barrier between you and everybody around you. It's like your clothing. You wear jeans and sweats like everyone else, but not because you like them. For you they're protective coloration. The first time I saw you, I remember thinking you would look more comfortable in a ruffled shirt and frock coat.

"Which is fine," she continued, "but don't hide from yourself as well. Come up for air once in a while. It will give you perspective. And—"

For some reason, she dropped her eyes to the table. "And you may find it's more fun as well."

Skin as fine as porcelain, lips as red as strawberries. I felt her body heat as she leaned close to me. Once I would have found her so desirable.

But I can swim no more in ancient seas, sweet water coursing through my gills, nor swing through verdant canopies, balanced by my tail. My body, all unasked, has put away the things of childhood. And of adolescence, as well.

Not wanting to hurt her, I put my hand over hers and gently removed it from my arm.

Talking to Marie may have served as a rehearsal. In any event, my

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progress report to Fr. Dougherty went well. He listened with interest as I marshaled letters and diary extracts connecting all but one of the librettists to Hoffmann, and Hoffmann to—

"The Comte St. Germaine," Dougherty said heavily. "I seem to remember, the last time I was in an airport, seeing a series of paperbacks with lurid covers. About a vampire, I believe. With that name."

"St. Germaine was a real person," I replied. "He was quite popular in the French Parisian salons just prior to the Revolution. Like his friend, Cagliostro, he was said to be a magician. Unlike Cagliostro, he also claimed to be immortal. Although, as one of my sources notes, he seems to have aged visibly during the Reign of Terror."

"Most did," Dougherty said dryly.

"He was a contemporary of Mozart and spent time in Vienna before moving on to Paris," I continued. "The excerpts I have provided from Hoffmann's diaries prove that he knew of St. Germaine. They hint that he actually met him.

"In some respects, I find Mme. Truffaut's letter describing the homunculus he produced at one of her parties the most interesting clue of all, since it provides a basis for the theme of automatons that shows up in all of Hoffmann's references."

Dougherty leaned back in his chair and stared at the ceiling. "The connections with Alidoro and Don Alfonso still appear remote."

"Well, yes." I had learned the hard way that trying to snow him would always be futile and might be painful as well.

"Still, you have made surprising progress and in surprising directions. My restrained congratulations. You have one more month."

I was dismissed. As I gathered up my papers, I said: "Yesterday, I saw Fr. Anthony's portrait being dusted. Will it be put on display again? Or is the scandal still too much of an embarrassment?"

Dougherty blinked at me. "Fr. Anthony's portrait is hanging where it has been since I joined the faculty. There is no scandal associated with it."

I stared hard at him, wondering why he would lie. "Alldraper has been telling me that there were all sorts of rumors. He admits that some of them may have been sparked by local anti-Catholicism."

"Alldraper?"

"The librarian," I said impatiently.

Dougherty shook his head. "Your librarian has a bizarre sense of humor. In Fr. Anthony's day, this area was populated by French Canadians and German Catholic immigrants, with a sprinkling of Poles and Irish. Anti-Catholicism was minimal, if it existed at all."

"But the rumors—" I began.

He fixed me with an eagle's stare. "You are doing history, sir! Rumors and idle gossip have no place in your work. Especially when it is scur-

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rilous slander aimed at a servant of Holy Mother Church. Leave that to *People* magazine.

"Fr. Anthony was one of our most respected and influential faculty members in the years following the founding of the college. If you have any doubts, you should read his biography. It is a model of scholarly research and humane insight."

He smiled, showing a row of yellowed teeth. "I wrote it."

I wandered in a thicket of dreams. Hunched over my mother's piano, I pounded away at Schubert's *Die Erlkönig,* reveling in the rushing octave triplets as much as in the melodrama of the story.

(I was twelve years old. In two months, three fingers broken in a game of rollerblade street hockey would put an end to my piano lessons.)

Somewhere behind me, a woman was weeping.

"Hush, *cheri.* There is no need for tears." I recognized the man's voice. It was not my father's.

I played louder, concentrating on the sick child, the fearful mother, the approaching Goblin King.

"You have all the things your heart has ever desired," the man continued. "Release from your 'sisters.' Wealth. A devoted husband. A fine young boy."

"A price." My mother's voice was low and ragged.

"Yes. But there is a price to all things. Cinderella and Rumpelstiltskin are names for two aspects of one story. You have lived the one. Now you must live the other.

"Is this price so high? It is not death, or even servitude. Some might call it a glorious prospect."

The child dies. The mother shrieks in despair. The Goblin King rides off in savage triumph.

I fled down the years away from the weeping. Perhaps five or six years old, I walked through huge rooms, illuminated only with spill-over light from the hallway. Conversation and laughter rose and fell in the distance, echoing down the stairs.

I entered a library. Bookshelves rose from the floor and joined the ceiling. I scanned the shelves with the eagerness of one who has just learned to love reading. Disappointment set in when I realized that almost none of the titles were in English.

A sense of great age permeated the room.

A table in the center of the room supported a great bronze head. I approached it cautiously.

"Tony." The voice was nearly drowned in the distant cacophony. Perhaps I only imagined it.

The eyes of the bronze head snapped open and fixed on me. I froze, utterly terrified.

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It spoke. (Waking, I would remember and understand only one word. *Tempus.*)

"Tony." Definitely my mother's voice. She must have noticed that I was missing from the party. She would be in the hallway now, searching the shadows, fighting a steadily growing apprehension.

The head spoke a second time. The inhuman voice was impatient, harsher than the first time. The eyes flickered, light and darkness roiling deep within them.

"I'm sorry," I croaked, my mouth almost too dry for speech. "I can't understand you."

"Tony!" Mother was very near now, fear shredding her voice.

The head roared at me, its voice like a furnace. I pressed my hands to my ears, trying to shut out that awful sound.

That was when it exploded.

It took me most of the next day to locate Alldraper. I found him in the computer center. His work station was hooked into the mainframe. His fingers blurred across the keyboard, slowing only when the computer needed a pause to catch up.

I stood by his side. He smiled without taking his eyes from the monitor.

"How good to see you again. I trust your research is progressing?"

"In unexpected directions," I said. "I learned from my adviser yesterday that Fr. Anthony left Ignatius only on being assigned a position at the University of Rome. No scandal forced his departure."

"Really?" Alldraper murmured. "Some things are forgotten so quickly. Perhaps it is my age. Memories become so confused."

Screen after screen flashed into existence and disappeared before I could note more than densely detailed diagrams, surrounded by blocks of small-print text.

"They must become tremendously confused," I agreed, "if you cannot remember your own name. The name on the college records, that is. Perhaps that is because it is a poor pun."

Still he did not look at me. "Coming from the old country, many families Anglicized their names in order to fit in."

"Not in your case," I said. "Tell me, does your hair ever go black at the roots?"

"Not if I'm careful," he said, in a voice almost too soft to hear. An incongruously wide smile split his face.

"I don't believe in coincidences," I said. "I don't believe you just happened to be dusting that portrait. Nor that your position in the choral arts group had nothing to do with the choice of the opera for this semester.

"What was really brilliant was removing the picture of the Comte St.

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Germaine. If the book had just been out, or lost, that would have made no impression. Razoring out the portrait in such a way as to make it appear that it was not to be noticed made it certain that I would think long and hard about the Comte's appearance.

"My guess would be that we have an acquaintance in common, an old alumnus. Someone lucky enough to escape a revolution losing no more than an eye. What do you think?"

The screens split in half. Along the left side, the helical four-lettered alphabet of life: adenine, thymine, guanine, cytosine. CG GC GC AT GC TA. . . . The letters tumbled down the face of the monitor, forming sentences and paragraphs in a story of incomprehensibly monstrous complexity.

A huge family tree, plotted in three dimensions, spread itself across the right half of the monitor. Names and decades flew past. Branches would be cultivated separately for generations and then brought together in some undefined culmination. Sometimes they would end with a single name bearing a single date.

Two names I recognized. And then a third.

Alldraper finally turned to me. A sense of triumph exuded from him, an almost savage feeling of happiness, like a mountain lion might feel knowing it was about to feast.

"I think you are a very intelligent young man. I think you have a long and glorious future ahead of you. And I think you know what to do about it."

In the end, I suppose Marie was right. I should have been paying more attention to biology class. I might have understood the why of things a great deal sooner, instead of just stumbling along with a series of whats.

Consider immortality. It has to be a loser's game. Imagine always being last year's model, becoming more and more obsolete as the creatures around you become faster, or smarter, or poisonous, or just more heavily armored. So whenever a mutation clicks off the death gene, it is only a matter of generations before the "immortal" ends up as lunch.

Only maybe it does not always have to be that way. The human race produces geniuses every so often. Think of Beethoven, stone deaf, having forced himself through the despair that nearly led to suicide. In his final years, producing the four last quartets, the *Missa Solemnis,* the Choral Symphony. Rising at an ever-steeper angle into the creative stratosphere, stopped only by death.

Suppose an immortal had that sort of intellect, that sort of spirit. What sort of life would he lead? Lonely, almost certainly. Friends would die. Family? Surely immortals cannot reproduce, or they would have crowded out all the rest of us by now.

He would want the fellowship of intellectuals, both for the mental stim-

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ulation, and in hopes that he could come to understand his condition. In Europe during the Middle Ages, only one institution would have had the continuity or the intellectual stamina to meet his needs.

One of the ways in which he would try to understand himself would be familiar to modern day scientists. He would make models. Call them automatons. The first attempts would be crude, perhaps even self-destructive. Eventually, even before another cleric established the basis of genetics, he would consider how breeding might lead to others like himself.

This sort of experimental approach to humanity might make him seem cold to his contemporaries. Like Don Alfonso, "a bachelor," with his dispassionate knowledge of the weakness of women. It was a weakness he would turn to his advantage repeatedly. Who was the first Cinderella and how long ago was she raised from rags because she had the right set of genes? How many times did it happen before it echoed into folklore?

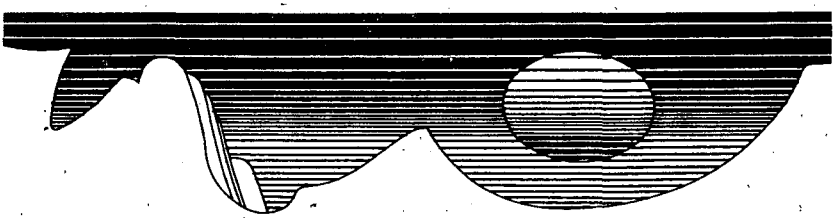
In time, when philosophers claimed to worship Reason, he might even have revealed himself for who he was—until the guillotine disclosed the monsters lurking in the sleep of reason. Through good fortune, or the centuries of accumulated cunning, he lost only an eye instead of his head. It was, after all, the established price for wisdom. With time, even that grew back.

How many centuries wondering, experimenting, conversing with the great minds of the age, trying to understand or, if not to understand, at least to have some companionship longer lasting than those who were streaming headlong to their graves all about him.

I think, and speculate, and dream, and hear the music of Rossini and Offenbach, Tchaikovsky and Mozart. Their notes bridle chaos, straining to control it with rhythm and harmony. It is an uneasy struggle. Sometimes the beat stumbles, and discord threatens to break through. Yet even if it is in vain, this effort is the only one that matters.

I guess what I am coming around to say is that, if it is your pleasure, I am willing to begin my apprenticeship.

Your loving godson,
Anthony ●



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IN WHICH GRAVITY IS A FUNCTION OF THE FALL

Because he feels in his cells
the chains of gravity
he falls flat on his back
in the wild wheat.
Then around him
goldenrod ignites
the flames of October
and he feels himself rising.
Spruce, birch, and apple
hold onto the ground
and the deep sky swirls
about their tops
as the earth spins,
and he grips their roots
tightly, knowing
that if an apple fell now
it would fly into space
and Newton's vertigo
would haunt him forever.

—David Lunde

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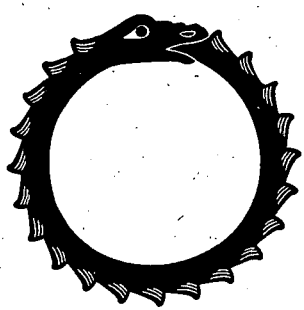
Geoffrey A. Landis



OUROBOROS

Hugo- and Nebula-award-winning author, Geoffrey A. Landis offers us a fascinating glimpse of what may be the *true* nature of reality.

"But this is incredible," said Dunn. He was wearing his Celtics cap, since it was still officially basketball season, but the jacket draped over the back of his chair showed that he was ready for baseball just as soon as it came. "What your math says is, that since quantum mechanics is completely deterministic after all—"

"Right," said Professor Beatrice. "That means an entire universe can, if we want, be perfectly simulated on a computer." She wore a tweed jacket and a wool skirt; apparently in the mathematics and computer sciences department, basketball season didn't count for much.

"But we—"

"We, ourselves, are composed of atoms and energy levels, nothing more. If we simulated a universe on a computer, we could simulate ourselves—or people just like us—perfectly."

"But it would be just a simulation."

"No, no. From the *outside,* you would know it was a simulation. But if you were the simulated grad student, there would be no conceivable way that you could know, no possible test you could perform, that would reveal to you that you were a simulation. The laws that govern your universe would be exactly the same as the laws that govern our own."

"But that means, if we just had the computer power—"

Beatrice smiled. "Haven't you been following developments in supercomputers? I just put in a purchase order. That's the next step."

Dunn seemed thunderstruck. "No! But if that's true, then we ourselves really *could* be just—"

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"Hey, look at this," Betsy said. She had been following the progress of the computer world with rapt attention for days now. "This is really something! The computer-model universe has people in it who just figured out that they could be a computer model!"

Dr. Torrez scrolled back the output Betsy had set her pointer to, looked at it, and smiled. "And why shouldn't they? After all, they are just as complicated as we are."

"But–" said Betsy. "But, can they really *do* that, and make it work? What happens when our computer tries to model another computer with as much computing power as it has?"

Dr. Torrez smiled. "That's the wonder of efficient data compression. A data set can contain within it a data set that has as much complexity in it as the original data, by encoding it within the redundancies of the original data. And the real universe is full of redundancy."

"Neat," Betsy said.

"And haven't we talked out that issue in exhaustive depth? How do *we* know that our *own* universe isn't just an algorithm running on a–"

"Hey, check this out, dude!" Samuel said. "This sim you're running is fan-freaking-tastic! Not only are the sim people running their own sim, but, get this—their *simulation* is talking about doing its *own* simulation of a universe!"

Fredrickson smiled. His roommate wasn't a computer jock, but Fredrickson got a kick out of showing off the output to him, just to hear his reactions. And he'd known that this one would really knock his socks off. "Pretty amazing, isn't it?"

"Amazing? That don't say half of it! It's like, fractal, dude! Fan-freaking-tastic!"

"Well, I would say that it's not so surprising as all that."

"Dude, open your eyes. Like, you gotta let yourself dance to the music of the implicate order. This is just so freaking cosmic, it's like, it's Zen, dude! I mean, think about it. They're simulating a world . . . we're simulating a world . . . somebody's up there right now, simulating us. Brahma dreams the world into being, man, and the world dreams Brahma."

"Somebody's simulating us, you say?" Fredrickson looked around with theatrical exaggeration. "Really? Well, suppose somebody was. How would we ever—"

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"This simulation is something more than merely incredible," Chen said, looking at the fast-scrolling output almost in disbelief. "It's absolutely uncanny. I *know* people who talk like that!"

"Don't call them simulations," Professor Mohlenbrock said. "By every definition, they are, each one, a real universe. Even though a universe lives inside our own supercomputer, it's quite as real as our own. Our universe is the manifold encompassing a deterministic working out of natural laws, and so is theirs."

"I'm surprised that it doesn't slow the program down to simulate a computer which is itself running a simulation."

"Well, it does slow it down a little. But, mainly, the program just compensates by approximating the calculation of unimportant details, like the insides of rocks that nobody's looking at."

"It doesn't bother you to think that we could just be simulations, too?"

"Should it? The universe follows laws programmed into it. Does it matter whether there's some external machine it runs on?"

"Damn right! I want to be *real*, not some lines of code!"

"But it's *all* real, Chen." Mohlenbrock shrugged. "Well, *somewhere* there has to be a real, physical universe. Ultimately, I suppose, there's got to be an actual machine to run code."

"Say," said Chen, "our simulation runs a thousand times faster than real time. That third level was talking about running a simulation. I bet by now they've–"

"It's amazing," said Dunn. "Every time I check your universe simulation, it's twice as surprising as the last time." Dunn was fully into baseball season now, with a Red Sox cap and T-shirt. "I never thought it would evolve people. Then I never thought that they'd think of running their *own* universe simulation. And now not only are they running a simulation, but their *simulation* is running a simulation that's running a simulation! Where will it stop?"

"Why should it stop?" Professor Beatrice said. "Maybe we're just a simulation on *their* machine." She still wore a tweed jacket, although, since the weather had warmed up, the wool skirt had been switched for a cotton one.

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"Or, on the simulated machine that their simulation is running," Dunn said. "Say, do you think that we could just scroll the output and see ourselves talk? Or, better yet, you think we could make them tweak the parameters on their sim and maybe let the Sox win one for a change?" They both laughed, and then Dunn said, "Hey, what happens when we take the machine offline for maintenance?"

"Hey yourself." Professor Beatrice shrugged. "Nothing at all. We just run them again when the computer comes back up."

"But—they'll cease to *exist!*"

"Not to themselves—the simulation will pick right up where it left off."

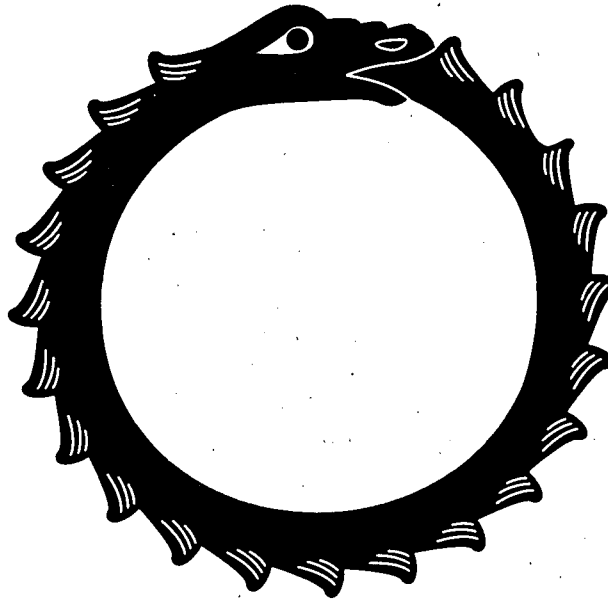
"And *their* simulations," Dunn said. "Those people will cease to exist, too. And their simulation's *simulations*—"

"Yes, yes. And so forth. They'll all be restored when the program comes back online. Does it matter?"

Dunn thought for a moment, then shrugged. "Guess not. It just seems sorta weird, that they could just *cease* for a while, and not even know."

"Just as long as nobody turns off the computer that's simulating *us*," Professor Beatrice said, "they'll never know."

They both laughed at that, and so did the people watching them on the screen, even though, really, it shouldn't have been funny to any of them. ●



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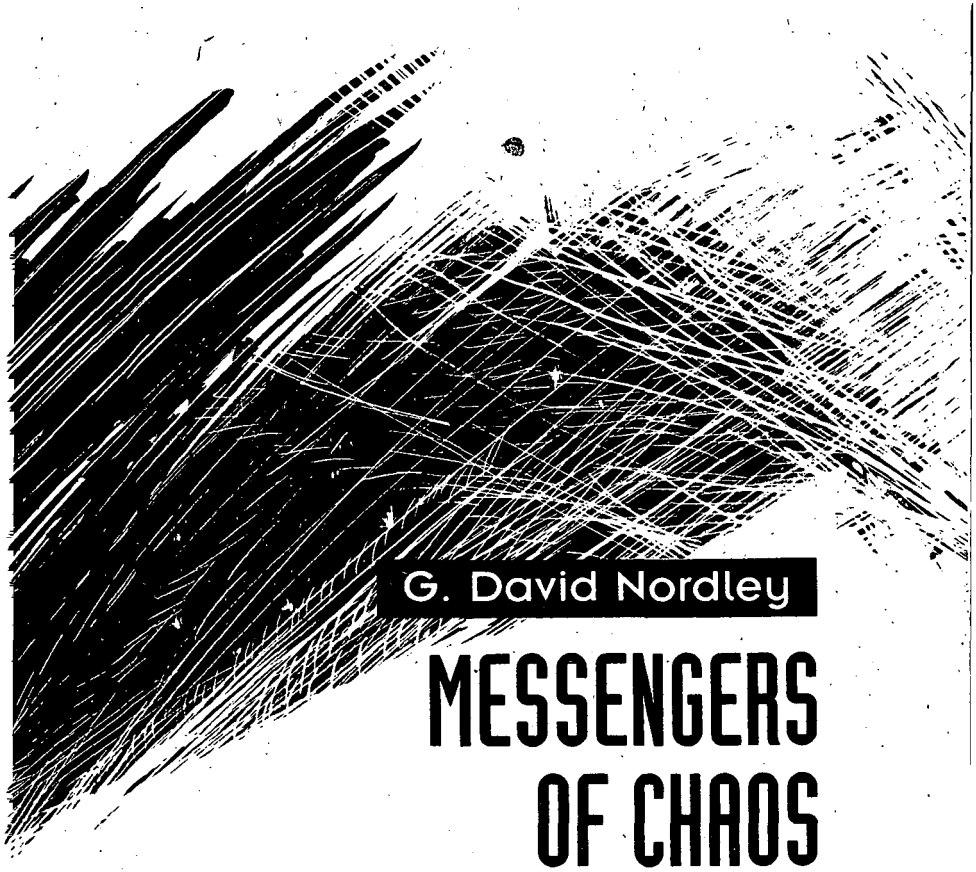
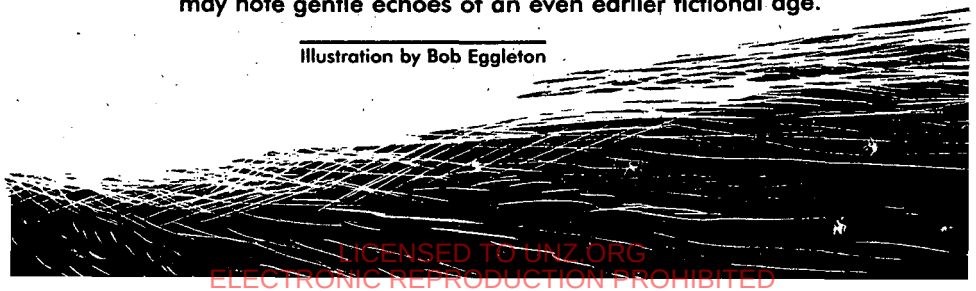


G. David Nordley

MESSENGERS OF CHAOS

G. David Nordley lives in Sunnyvale, California, with his wife and son. A retired astronautical engineer, he is the author of some thirty published works of short fiction, a dozen or so nonfiction articles, a few technical papers, and a couple of as-yet-unsold novels. "Messengers of Chaos" takes place about a century earlier than "Alice's Asteroid" (*Asimov's*, October 1995) in the same more-or-less consistent future history as most of his other *Analog* and *Asimov's* stories. The observant reader may note gentle echoes of an even earlier fictional age.

Illustration by Bob Eggleton



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"Hart," Chief Tad Reynolds's Harvard-educated voice said in my ear, "finish up what you're doing. Sam Wu's been killed." It was Wednesday, September 30, 2068—a day that, up until then, had been pretty routine as far as what passes for crime in the largest city on the Moon.

"What?" I said, so loud that the skinny kid in front of me nearly hit the ceiling. She fell back with an embarrassed giggle as I pointed to my ear—lunar gravity teaches self-discipline in several interesting ways.

"Sam Wu," Tad answered. "At his desk, dart in the shoulder, about two hours ago—we just found out. The scene is stable, but finish up what you're doing and call me as soon as you're free."

Sam Wu was the Cislunar Republic's Minister of Allocations and Trade—cabinet rank. It was Sam's unfortunate job to say "no," here and there, and, apparently, he'd said "no" to the wrong person. This wasn't just a murder—it was likely an assassination. "Got it, Tad. Give me five—I've got a kid with me."

The girl, Tina, was nervous to start with; the pusher had threatened her if she told, but her mother sent her to me anyway. The pusher was from Earth—nearly a thousand Terrans came through the maglev port every week, some of them with crime on their minds.

"Sorry, Tina." I pointed to my ear again. "Something's come up. My boss wants to talk to me. Can you stay at the station for a couple of hours?"

"Mommy said I could stay all day, if I had to. But my moonball team has a game at sixteen."

It was close to 1500. "We won't hold you up that long. Now, I'm going to leave you with my computer friend for a while. His name is Dr. Watson. He's going to show you pictures of every adult Asian male who's come to the Moon in the last three weeks, and you need to tell him when you see anyone who looks like the man who tried to get you to try drugs. Then he'll morph the face until you think it looks exactly like the man you saw. Okay?"

"Okay. What do I do then?"

I reached into my drawer and pulled out a little pin with the Cislunar Republic stars and globe logo on it and gave it to her. "Then you can say goodbye to Dr. Watson and go home. But I'd like you to wear this until we find the bad man. It will remember everywhere you go and everyone you see, just in case. And if you yell 'help,' Dr. Watson will send one of us to help you. Understand?"

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ementary, Officer O'Reilly. Tina and I will make short work of this matter, never you fear!"

Tina's seriousness shattered into a giggle. I smiled, slipped out into the anteroom, and keyed my wristcomp. "Tad, Hart."

Tad Reynolds's thin, rugged face nodded to me from the tiny screen as he pushed an invisible hair from his forehead. "Lousy deal. You're senior, and murder's your hobby. I thought I'd put you on it." Our chief public safety officer looked like a country club golf pro, stretched to two meters. He usually wore an infectious little-boy grin. Not now. At thirty-thousand or so people, Coriolis Municipality was still a small town and most people who were involved in government at any level knew each other. Disagreements or not, this was a death in the family.

I nodded back to him. "How'd it happen?"

"Dead in his office for about three hours, with a hell of a good simulation covering the fact. Kate Samios found him after she got tired of waiting outside and barged in to push for the comet expedition. Looks like a single trank dart loaded with an overdose, from the wound. The dart's gone."

"Damn!" The darts were traceable, but apparently the assassin knew that. "How's Kate?" Kate and I went way back. The thought of her just walking in on a stiff who used to be someone she knew bothered me.

"Kate called me first thing—she's okay; she went outside to deal with it."

"Yeah, she would." We'd grown up together in Coriolis and went to school here. Then Kate went up to L2 for a doctorate in astrophysics while I stayed here for a security degree, got a badge in '53, met Linda and got involved. It was Officer O'Reilly and Dr. Samios by the time Kate came back to teach at the University, but Kate would always be the open-hearted girl next door to me. She *was* far-eyed—it's probably in our Lunie genes, that outward impulse. Yeah, she'd go outside to deal with it.

But I was going to have to deal with it inside; this was going to be very public, very soon, and I had to get on it quickly. "Who's at the scene?"

"No one's been in there but me since Kate found the body. I offed the sim and we got out—haven't even sent a motile in. Figured you'd want to handle it clean."

"Thanks." I meant it. It was my turf, kind of. We'd had five murders in the last four years here, and I'd handled four of them.

"Hart, this is a big one." His implication was clear. Don't blow it. Stay in control.

"Understand. I'll be over there in about ten minutes."

"Good. Call as soon as you've got a handle. Out." His face disappeared.

I waved to the desk officer and made my way past the line of unhappy people waiting to see him and out to the balcony to grab the descent pole. I took a moment to gaze at the largest city on the Moon and felt that little tingle a native Lunie gets looking at what we've made here.

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Coriolis Municipality is laid out like a big cross dug into the top of the crater rim where the maglev launch track starts. The Coriolis Municipality Security Bureau offices were in the south trench, Cislunar Republic offices in the north. I slid down the pole to the sidewalk and decided to take the park path instead of the tube—the two-kilometer walk would give me time to think. I settled into a nice long stride; between noon hour and school out, the path was pretty clear and I could put my body on auto while my mind spun.

Sam Wu wasn't—make that hadn't been—popular. But he was brilliant, and gave very good reasons for everything he did–which was why he was in the job. Still, he was remote, impassive, and unyielding. People who rely on personality instead of reason to get what they want found that he didn't respond to their cues. Worse, they found him allocating resources to other unpopular, unsympathetic people who, in Sam's view, had better reasons. But Sam kept everything running and everyone about equally short of resources—so he had a reputation for impartiality.

I made a mental list of people likely to be unhappy with Sam. At the top were the South Americans. The Republic had cut immigration from that part of Earth to a relative trickle in response to their failure to make much headway in population control. About half the new housing there was made from moonglass panels, and Sam had cut materials allocations in favor of east Asia and Africa south of the Sahara. Policy aside, there were complaints that he favored the Chinese for racial reasons.

Coriolis University also had a number of hotheads who insisted that Earth had to curb its population growth eventually and that we should stop facilitating its bad behavior—conveniently forgetting that's what our ancestors were sent here to do.

We still sent over half of everything we made down the gravity well, but Earth wanted more; more outreach, accelerated Mercury development, quicker Martian settlement—looking ahead ten years as opposed to fifty.

Speaking of the university, there was a moonball game going—Coriolis blue against Clavius red—in a court just south of the Central Park, where the four arms of our cruciform city meet. One of our "Blueskins" caught a lob in mid-leap and pegged the large softball at the target hole from what must have been ten meters up before she got tackled. It must have been my day—her shot went in; in two hours plus overtimes, the usual college moonball game score is something like 2 to 1. Celebrations of the rare goal erupted, filling the air with demonstrative young bodies.

I recognized one of Linda's brothers coaching on the sideline and waved. During the troubles with the U.N. over the L1 Station, there was an immigration hiatus and a big patriotic baby boom. Sometimes it seemed like half of us were related.

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Relatives. Wu had an estranged son, Chun-Hee, who'd bounced from the university to his mother's escort service to semipro moonball. Sam resented Chun-Hee's uselessness. Chun-Hee resented Sam's preoccupation with Earth. Chun-Hee had been a software major at Coriolis U and might have, or might know someone who had, the expertise to do the sim that had served as the murderer's smokescreen.

Then there was a spacecraft contractor who'd almost come to blows with Sam—it had been on the news a week ago. He'd lost an order to an Earth company for one of the new Saturn liners because Sam wouldn't take our replicators off making parts for China's Mars fleet. He'd have access to that kind of technical expertise as well. I asked Dr. Watson to get the contractor's name as I headed up the North Park path.

"Ahmed Fhasi," came the answer. I glanced at my wristcomp screen—it showed a picture of a Mediterranean type of the clean shaven, bald, and well-fed variety. I didn't know him.

"Don't see him around much."

"He spends most of his time at his plant, out under C-23 North Rim."

"Thanks."

I reached the crime scene. North trench was fourteen stories deep. Buildings with balconies and neoclassical façades rose up on either side of the government area. Overhead was the dark arch of our thick moonglass roof. Floodlit day in here, night outside.

Sam Wu's office was on the third floor, two units left of the entrance. Inspired by the moonball game, I ignored the outside lift pole and jumped right up to the third floor balcony, grabbed the handrail and pulled myself on. The office was typical of the older parts of the city; the north-south trench was almost fifty years old now, and the balconies still had sliding emergency pressure doors. Those massive things hadn't been closed since the automatic roof-seal backup systems were installed on the trench roof a quarter of a century ago, so the room had a permanent two-meter opening to the balcony with no physical barrier at all—except a yellow tape that was less than half an hour old.

That kind of openness, I supposed, might have to change now.

Sam Wu's body was sitting behind his desk, slightly slumped, with his back to me, like he was bending over some hard copy and might turn and say hello in a moment. Like most reasonably fit lunar citizens not going to or coming from outside, he was wearing walking shorts and sandals, nothing more. His shirt was hanging on an antique polished wood coat rack in the corner. Whoever had come in during the sim had been a casual appointment—someone he knew too well to have to put a shirt on—probably a local or a visitor he'd had frequent contact with.

"Dr. Watson, I suppose Sam might have been shot from the balcony, then turned back toward the door before he lost consciousness, but it doesn't look like that to me. Nor is it likely that he was shot from the in-

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terior door to the office—that's off to his right. My guess was that he was shot by someone standing right in front of him."

"Quite likely, I should say."

"Right. Tell Tad I'm on scene now. On the balcony."

I waited a minute, then two. Finally Tad's face appeared in my wrist-comp screen.

"Hart, I'm busy with Ahmed Fhasi. He says Wu made a verbal commitment to let him make an experimental ship for the comet mission, and he's worried that there's no record of it now. And he's right. If there was anything on Wu's computer, the simulation wrote over it."

"Thanks. I'll check myself as soon as you release the site."

"It's released as of now—his cyberservant program is called Fu-Tse. And there are a dozen forensic robots waiting outside the door."

"Roger, thanks again, Hart out. Fu-Tse, open the door."

The inner door slid open and the forensic robots floated in with a barely audible whirring sound—only ten of them; Tad exaggerates. The miniature blimps coasted around, imaging everything in the room down to a tenth of a millimeter for later analysis. They were followed by some mechanical spiders, about half a meter tall, that picked, sniffed, vacuumed, microsampled, and cataloged everything loose on Sam's carpet, desk, and body. Then I ducked under the tape to take a look myself.

"Dr. Watson, O'Reilly. I want you to take over for Fu-Tse."

"As you wish. Accomplished." Watson's smiling face appeared in Sam's screen.

"Good. Now, what have we got on footprints?"

"He had three visitors, going back to about four hours. Nobody after the sim starts."

"Who were the three?"

"In order, they were Ahmed Fhasi, Wu Chun-Hee, and Mathilda Soames."

"Who?"

"His new deputy, a New Zealand immigrant. She . . ."

"Hold it. I remember her now." A big, tall, olive-skinned woman with a attitude so positive it was almost oppressive—she'd have her fifteen minutes of power until Prime Minister Nakasone decided which of his political cronies would get the portfolio.

A thought occurred to me. "Does she know?"

"Not by public communications, and the sim would have been telling her he was busy until Tad offed it. No calls since then."

I had a chance to make a test, but I needed someone who wasn't a cop. "Ask Tad to hold off telling her, and get Kate for me."

While I waited for Dr. Watson to find Dr. Kathryn Samios, I surveyed the room with my own eyes, looking for anything I'd think was unusual or out of place. First, the corpse.

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"There's a bruise and a red puncture wound in Sam's right shoulder. The dart's been removed. Not by Sam—I'd say." Yanking darts out automatically to avoid an effective dose is a painful part of lunar cop training, but . . . "I don't think Sam had been trained to pull darts and, obviously, he didn't avoid a lethal dose—so someone else, presumably his killer, pulled the dart out."

"There is no record of Sam having public safety officer training," Dr. Watson confirmed.

"Right. I'd say odds favor a Lunie or a spacer—Earth perps tend to use bullets. But a clever one might get a dart gun just to throw us off the track. Best check Sam's Earth connections—see if any of them or their agents are up here." While Earth money wasn't that important on the Moon, back on the home world, Sam Wu's decisions on where to send what would mean lots of money—enough to attract criminal undergrounds like honey attracts flies. After the troubles, we'd kept the right to decide where our stuff went—and the U.N. was just as happy not to have to deal with fights over it. They say a Muslim holds the keys to the Church of the Holy Sepulcher, for similar reasons.

"Sam reported more than one bribe attempt," Dr. Watson said. "We locked one miscreant in the ice mines of Peary Crater for the rest of his life for attempted extortion. And yes, the blackguard is still there."

There was, I remembered, at least one new Earth criminal on the Moon.

"Dr. Watson, has Tina found her pusher yet? Do you have a make on him?"

"Yes. But it's a she. *Her* name is Ayun Nu—she was masquerading as a man. The child isn't sure, unless I show her as a man, but the bone structure recognition software was not deceived." I smiled. Part of Dr. Watson's job is to gently remind me of the capabilities of our cybernetic servants—easy enough to forget when we start thinking of them as fellow personalities.

"Did this Ayun Nu have any connection with Sam Wu?"

"Yes. She visited several times in the last month, on behalf of a Myanmar trade association. They said they wanted market access for their cosmetics, the secret ingredients of which they did not want tested. She offered a sexual gratuity. Sam took the gratuity, reported the attempt, and said no to the deal. She threatened to tell Sam's wife. Sam reported that. She carried out her threat, found Carrie, and Carrie filed a report, too."

I had to smile—Ayun Nu had picked the wrong couple to try to blackmail that way. Sam's wife, Carrie Fielding, was the free spirit that ran our volunteer escort service; Sam was *on* the Moon, in part, because his family would not accept such an independent wife.

"Sounds amateur, Watson. Perps with staff tend to check things out. Ayun Nu and anyone working with her are likely to be small potatoes or

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they'd have checked out Sam and Carrie and not tried to blackmail him that way. But that might make them even more dangerous. They probably don't know the rules." I thought about Carrie—not only was she out of a husband, but she might be in danger herself. "Has anyone told Carrie?"

"She was with a Taiwanese writer all day, on Nearside, Clavius Crater. Tad Reynolds is talking to her now."

"Better him than me." Linda was one of Carrie's volunteers, which was no problem in itself—I tend to get busy and it gives her something to do. But we were having problems now, drifting in different directions professionally and sexually. Carrie had been encouraging Linda to make a break, and so my expressing great sympathy for Carrie would seem just a bit ironic, now.

Crap, it was time to get my mind back on the case. "Where's Ayun Nu now? And where was she at the time of the murder?"

"Not accounted for, I fear. We have her leaving Spaceport Hotel at 0940 and returning to Duluth's for lunch at 1345—as a woman. Her effort to push Tina was about 1020."

That still left plenty of time to pay Sam a visit.

"When was the sim installed?"

"Sometime between yesterday afternoon and 1252 this afternoon—that's the earliest confirmed simulated response to an outside contact—the simulated Sam had his shirt on."

A safe guess by the perp, but, this time, wrong. "Ask Tad to have Ayun Nu picked up on the pushing charge. I'll interrogate her later."

"The pinch is on. In the meantime, Kate Samios is waiting to speak to you."

"Put her on the wall here."

She was outside, on an instrument platform. It was night, and to show her suit in the starlight, the pickup filled the field with even more stars than the naked eye would see. Ghostly rolling hills formed the backdrop. After a hundred and thirty some years, a moon suit was still a moon suit—simpler and less bulky than the ones Armstrong and Aldrin wore, but still basically loose white coveralls over a pressure suit and a helmet with a wide shiny visor.

"Kate, Hart. You okay?"

"As long as I'm out here—puts it in perspective. You ever want to be part of it, Hart? Just take off the suit and let yourself evaporate into it? We're so insignificant. That's the *universe* out there—it runs everything. Guess Sam found out."

"Kate, hold the philosophy, I've got a murder investigation to do. I'll need to know what you saw. It doesn't have to be right now, but . . ."

"Breath vacuum, Hart, it will do you good." She sighed. "Sorry, even dead, Sam's being a pain in the ass! Gonna miss him, though. Look—I've got Comet Angel rising over the East rim—the coma just on the horizon

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with the tail heading off to Jupiter. God, it's magnificent. It looks absolutely huge on the horizon."

That wasn't what I was calling for. "Kate . . ."

"Look, I told Tad everything I knew about Sam. After waiting in his lobby for an hour with no response out of Fu-Tse, I ran out of patience and walked in. He was sitting there like a little Buddha with a tiny red hole in his shoulder. I checked his pulse and called security—end of story."

"You touched him?" Of course she had, I reminded myself. Anyone would have.

"Damn right I touched him. He was more likely tranked than dead, right? I could have saved his life, maybe."

"Just for the record, how did you know it was a trank dart wound?"

"What the hell else would leave him sitting like that?" Belatedly I realized I was standing by Sam's desk, giving Kate an unimpeded view of what she'd gone outside to get away from. Crap. Well, the damage was done.

"A bullet and internal bleeding maybe. A blow to the back of the head. Kate, leave the cop work to us cops, okay? Look, I'd like you to do a favor for me, right now, if possible."

"Sure, Hart. I'm easy, remember? But will you at least take a *look* at the comet, first? Brand new from the Kuiper Belt."

I'd once been, briefly, the object of Kate's passion when I needed it the most. I wondered if that leaky, dusty, dirty snowball had any idea of how privileged it was. "Go ahead. Dr. Watson, take her video feed."

Kate was between the camera and the comet, giving me a scale reference, which made the comet as awesome as advertised. The glowing ball of its coma looked as big as her head, and its shimmery tails of gas and dust lay like brilliant curtains above. At the center of the coma was a tiny brilliant point—a nearly opaque cloud as large as a major planet. Somewhere inside it would be a dirty lump some ten kilometers or so across—absurdly tiny for its effect, and a suitable metaphor for the chaotic processes that sent it our way.

"I want that comet, Hart. I want to stand on it, sample it, experience it! No one's been to a live, wild comet yet."

Wild comet? At times I have to remind myself that we wouldn't be living on this dead ball of rock if people like Kate hadn't been moved by sights like Herbert Angel's comet. But I had work to do.

"Lovely, Kate. But, just now, I need you for a mild deception. Are you up to it?"

She sighed. "What do you want?"

"I want you to call Mathilda Soames and tell her that Sam just approved your comet expedition. Ask for an allocation number or whatever you do to get going. She doesn't know he's dead yet. I want to record her reaction."

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I wish I could have seen *Kate's* face, or even her body language, as I said that. But all she showed me was the comet itself.

"You're contradicting yourself," Kate said.

"Huh?"

"You just said 'Leave the cop work to us cops' and now you want me to do cop work." She laughed, light and breathy. "I've got mental whiplash."

"Kate . . ."

"All right, all right. I'll call Mathilda. But under one condition."

"What's that?"

"If she swallows the line about Sam okaying the comet expedition—it stays swallowed, okay? One way or another, I'm going to that comet."

Something clicked. "Kate, Ahmed Fhasi told Tad that the expedition's already approved and he's building the ship."

"He did?" She must have been silent then for several seconds, or longer. The comet filled the time—I could pretend to be unimpressed, but looking at that display made you think that there were more important things in the universe than even a murder. Then she laughed. "Hartigan O'Reilly, did Ahmed say that *before* or *after* he learned that Sam was dead?"

I winced. Of course. "You aren't implying that Mr. Fhasi would go ahead and build a comet chasing ship instead of the Mars transports he is supposed to be building without an okay from Sam? And then take advantage of Sam's death to claim he had the go-ahead?"

"Comet Angel is going to blow by here in three weeks. If we're going to catch it, the ship has to be ready damn soon. It's the last wild comet, you know."

"Huh?" That word "wild" again.

"Herbert Angel was identifying Kuiper belt objects to mine for making a new Martian atmosphere when he found this one on its way in from way out in the chaotic edge of the Oort cloud. It was just in time. Every comet that comes in from here on will get tagged with a crew and a propulsion system—even after we're done terraforming Mars, because we won't want them to hit anything. Our descendants might *arrange* comet passages for people's amusement, but it's becoming a little too crowded in here to let icebergs whip around unguided. This is the last wild one, and I intend to catch it. So I sure hope Ahmed has the ship ready, even if he had to cheat a little—that old carpet merchant!"

"You're saying that Sam's death could be very convenient for Ahmed." Things were getting complicated fast.

"Elementary, my dear Hartigan." Kate laughed. "But I'd bet he was out at his launch base. Well, I guess I'd better call Mathilda—got cop work to do."

I knew Fhasi hadn't been outside, but I didn't argue. "I'll talk to you later."

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The comet faded, and I found myself alone again with Sam's corpse.

"Dr. Watson, tell forensics they can have the corpse now, and get Ahmed Fhasi for me."

In minutes, the proprietor of Farside Spacecraft Company was on the screen. He had a broad face with a prominent nose, deep folds, and iron gray eyebrows—the only visible hair on his head. His eyes were dark and his stare intense.

"Officer O'Reilly. This is a tragic time; Tad told me."

"Mr. Fhasi." I stepped aside so the video pickup, and Fhasi, had a clear view of the corpse. "I understand you had differences with Sam Wu."

His face showed only sorrow. "Yes, but . . . but they were in the process of being resolved—in fact, Sam told me some time ago that he was likely to approve my construction of a new kind of spacecraft to visit Comet Angel."

"*Did* he?" I stared at him for a moment, to no effect. Fhasi looked utterly sincere. "Mr. Fhasi, do you own a a dart gun?"

The hint of a smile touched his lips. "If I did, it would have to be unregistered, would it not?—since you have checked the registrations. And what person in his right mind would tell a cop he owned an unregistered gun?"

"A person who wanted to avoid even worse problems. Sorry, but I need to interview everyone who had access to Sam's office today—motive, ability, and opportunity, that kind of thing. Can you tell me what you were doing between your conversation with Sam Wu and now?"

"I understand; you are doing your job. We finished before lunch. I had coffee with a friend of mine at one of the cafés around Central Park. I walked around. I watched a moonball game—women, I think." There was that smile again. "Does that help?"

"Not really; there's been a women's tournament going for the last three days. What was the name of the friend?"

I got the name of the friend and what Fhasi remembered of the time, which wasn't much. Having coffee, wandering around, watching moonball—not the sort of things, I thought, that one would do if one's pet project had just been approved. Those were more like the reactions I'd expect if the project had been disallocated. Still, that simulation running Sam's computer spoke of premeditation, which wouldn't be the case if Fhasi had done it in a sudden rage because he had just found out about a disapproval.

"The forensics detail is here for the corpse," Dr. Watson said.

I'd done all I could at Sam's office, and left as they entered.

The staff brought Ayun Nu to my office first thing the next morning. She wore a shimmery green gown that went from neck to ankle, though slit almost up to her waist on her right side. I found myself trying to imagine the geometry of anything she could be wearing beneath it and

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failed. I also tried to imagine her as a man. When I looked at her face—yes, there was enough harshness there to carry it off. She had eyes that had seen a lot.

When the door shut, she smiled, not too confidently, then ran her hands down her body, looking me straight in the eye. "I am not unreasonable," she said, "and I know many ways to please."

"Please sit down," I snapped.

Her eyes went wide and she seemed confused. "Have I offended you? I mean only to offer what I can."

"Right." I turned to the other door to my office. "Jane, you can bring Tina in, now."

Jane Sellica was Tina's mother, a dancer with the Coriolis ballet. She was a larger version of her daughter with the same short, ebony hair and innocent, playful eyes—now overlain with a determined seriousness. She'd come dressed for her work, and a glance at Ayun showed the Eurasian woman at once wide-eyed and mortified. Ayun probably counted on being able to trade on her body—which was okay, but not up to Jane Sellica's standards.

Jane, for her part, looked at Ayun as if she were something the cat brought in.

"Jane," I said, "this is Ayun Nu. Ms. Nu, this is the mother of one of the children you solicited."

"I am very sorry," Ms. Nu said.

"Crap. Tina, is this the person who tried to sell you drugs?"

"I, I don't know." Tina was wide-eyed—the change in Ayun's apparent sex must have fooled her.

"She would have been dressed like a man," I said. "Forget the hair and the dress and look at her face."

Slowly, very slowly, Tina nodded. "She has the same face that he did. Uncle New?"

Ayun dropped her eyes and seemed to wilt. "A disguise. Not, I see, a very good one. Jane?"

"You have something to say, Ms. Nu?"

"I have committed grave offenses to your customs; I apologize and offer you my life in service to help me stay here."

"Huh?"

I figure some people have to overdo everything. "Jane, she means she *has* to stay here. She wants you to drop charges, and she needs a sponsor. She says she'll work for you the rest of her life if you agree—which wouldn't be a legal contract even if she means it."

"Of all the outrageous . . . after what she tried to do to *Tina*?"

Ayun sighed. "I meant no harm. She was on the street alone—I didn't know she had a family. I offered her pleasure and a chance for great wealth. Tina was not ignorant."

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Jane's jaw dropped. "Tina's only nine years old! Watching video talk shows from Earth and getting molested for money here are two different kinds of knowing. We have laws against using children that way here!"

"Laws?" Ayun Nu looked at me and at Jane. "So does my country. But laws come and go. Survival is more important." Ayun looked confused. "I learned the value of my body when I was seven. I did not realize that a child walking on a street like that would have a home and parents. We dress differently and stay with our children. I am very sorry for my foolishness. But I beg you now to let me stay here. My failure to do what I came to do is such that my . . . colleagues . . . will certainly kill me if I return."

"Kill you?"

"I borrowed money from an association in my village and went to the Moon before paying them back. It looks bad. They will make an example of me." She shrugged, but held her head up. "I am now at your mercy. That is my fate."

This woman, I thought, might not cower in the face of a painful execution.

"It's okay as long as you don't do it again," Tina offered.

"Tina!" Jane looked mortified.

Ayun Nu bowed gravely to the child.

Jane shook her head. "How long will you lock her up?" she finally said.

"We won't, not on a tourist visa—we don't have that kind of jail space. We'll send her back. Even if you drop charges on this, there's an attempted bribery charge which will still get her sent back. Oh, I can hold her for investigation for a few days, but there doesn't seem to be much more to investigate. If you drop charges and offer to sponsor her, and if she cooperates in the bribery investigation, Tad might be willing to drop those charges. Otherwise, she's out of here."

"Will you be good, now?" Tina asked before Jane could hush her.

Ayun looked around at us, and nodded to Tina as to an adult. "I was going to instruct you in my ways. But now, it looks like you should instruct me in yours. I will try to be good, but I will need help to know what being good is, here."

"She's dangerous," Jane protested.

Ayun shook her head. "I have only tried to survive."

"*You* sponsor her if you want to," Jane said to me. Then she looked at Tina, who looked back at Jane with big round pleading eyes. Jane sighed. "Okay, I'll drop the charges, but I'll have to think a lot about sponsorship. And Ayun Nu, this isn't some kind of fool's paradise. Tina has a parent, not parents. Her dad went off to Mars two years ago with another woman and not a goddamn thing I could do about it."

Ayun Nu looked up. "I can play the man in more ways than one, Jane."

Jane opened her mouth, shut it, and shook her head. "No. No. No! Hart, let me deal with this later. Tina, we're going now."

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I nodded and they left, Tina turning at the door for a last look at Ayun Nu.

After the door slid shut, Ayun Nu said, "Our police can be persuaded to look aside. But, you, O'Reilly, will not look aside for anything I can give you. Perhaps that is a better custom. But I am reduced to begging for your help."

"Yeah. Look, I can put you in protective custody for a month or so. It'll be a cell, technically, but I think you've seen worse. It's got an open balcony, but don't try to leave—you'll be tagged and watched by human guards as well as the cybersystem. Meantime you can study lunar society. And, by the way, did you kill Sam Wu?"

There was no flash of a guilty look. She just shook her head. "No. I offered him pleasure to see things my way, and he acted as if *he* were doing *me* the favor to spend his time with me. I was angry, but I think I understand my error now."

"What were you doing yesterday afternoon?"

"I was giving treats to children along your streets, so that they would someday become my customers, until I was arrested. Again, I am sorry to have done this."

Yeah, she was, because it got her into trouble. I wondered what it would take for her to see what she was doing as morally wrong? Did they still have morals where she came from? "How many?"

"About ten of them. Didn't they all report me like Tina? Won't you be able to recognize me in your camera records now that you know what to look for?"

"We don't have general street surveillance here. Business and personal door scans will occasionally catch a passerby, but we don't try to watch everywhere all the time." Nor, I mused, were our personal comps required to network with central—the more we Lunies are dependent on each other the more we value our independence and privacy. Our main defense against visitors like Ayun was our scientific, highly educated, small-town culture. A sand castle on the tidal flats of history, which I was trying to patch.

"Do you think you can identify the kids if you see them again?"

"Some of them, maybe."

"We'll need to notify their parents, find out when they were where, interview them, and then, maybe, just maybe, you'll have an alibi."

In the meantime, I would have, on top of everything else, one somewhat incompetent dragon lady to nursemaid into a maybe sincere reform. Maybe Linda could help after she got back from escorting her golf pros on the Nearside. God, I did not want to see Linda's smile when she saw Ayun. In the meantime . . . I called a deputy to take Ayun to her cell and get her working on identifying children who might have been out playing in the ten square kilometers of path and park of our little

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city. She walked out with a regal dignity, and drew long stares from every perp, lawyer, and cop in the waiting room. Who was kidding whom?

My phone chimed. "Kate Samios," Dr. Watson said.

"I'll take it."

Kate's helmet appeared on my wall.

"I talked to Mathilda. She said Sam never told her anything about approving the comet expedition, and that she'd call him as soon as I dropped off. So I guess she knows now. For what it's worth, she didn't look very guilty to me. The comet's just over the horizon now, it's . . ."

I held up a hand. "Send the video to Dr. Watson. I'll check it later, and thanks very much."

"Linda still at Shepard Crater?"

"Until Friday." Kate and Linda had been sharing boys since ninth grade, when they weren't sharing each other. Hedonists, both of them. I could guess where this was going, and smiled.

"Hmmm. Then why don't you stop by and thank me in person after you've had enough 'cop work' for the day?"

I remembered being a teenager and thinking it was inconceivable that a woman who looked like Kate would ever suffer from lack of biological attention, or that I would ever turn her down. But I was busy—completely involved in the problem at hand and not in the least bit horny for Kate, Linda, Madame Nu, or anyone else. But I could really hurt her by saying no.

Sometimes, though, honesty is a lot better than trying to fake something. "Kate, thank you—but I'm just a little too caught up in this right now to give you the attention you deserve . . ." I stopped as I recognized the words I'd just used. How many times had I used the same words with Linda, and her with me, recently. I'd known Kate for thirty-five years. ". . . hell, okay, I've got to take a break sometime. But it's likely to be late."

"About 0300?" She laughed. "Like on the Hadley hike?"

We'd been in high school, on a field trip to the historic Nearside crater, its deep rill and its Apollo landing site. I'd taken a ridiculous, irresponsible, disaster-inviting chance—one little "yipe!" out of her and the chaperones would have been all over us. But she hadn't hesitated a second, and I still felt like I owed a debt to her.

"Well, maybe not that late. But I'll stop by."

"See ya. Bye."

I did stop by. There's no pressure with Kate, no obligations, no secondary agendas, no attempt to make a work of art out of it. Just lots of honest affection, fun, and good memories. If my distractions bothered her, she didn't show it that night. The next morning, I wasn't even distracted.

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In fact, as we lay there, she was the one who brought up the subject of work, or rather the philosophy behind my work. "Would you like to go back to executions?" she asked. "I mean, if someone deliberately kills someone, shouldn't they pay with their *own* life? To put things back in balance?"

"Kate, turn that around. If someone is *willing* to pay with his or her own life, does that make killing okay? Not for the victim. I think we gotta get away from the idea that punishment is a 'price' one pays for whatever one gets out of crime. What we're trying to do is to keep people from committing crimes *regardless* of the price—and that, especially, applies to murder.

"No, as far as I'm concerned, being caged up with a murder on one's conscience for the rest of one's life—especially when that's going to mean literally forever in a few years—is a lot better deterrent than death. I've been a cop for fifteen years, and people that risk their lives for something aren't that unusual, but people willing to risk eternal torment. . . ? I think the old U.S.A. had it right—they'd execute murderers, yes. But first they put them through ten years or so of mental and emotional torture. Then—when all that was left of the murder in the perp's mind was the intellectual fact of it—*then* they'd execute the sucker. Brutal."

She stretched, sensuously, like a cat. "You like playing God, Hart?"

"Huh? I don't pass the sentences, Kate. I just catch them."

"Someone might think there was a higher law, a law above the ones our governments pass, one that says that if you are willing to die for something, for that one thing, you can do whatever you have to do to get it done."

"You're describing a religious fanatic, Kate. I don't think Sam ran afoul of any of them."

"Maybe not." She brushed her index finger over my forehead to the tip of my nose to my lips. I kissed it. "Drug addicts? Sex addicts? Someone whose own life means so little that nobody else's means much either?"

"It's common enough on Earth. But Ayun's not an addict—she checks out clean."

"Does this group that sent her here have a name?" Kate asked.

"They often don't. It's probably an 'our thing' kind of deal—everyone involved knows who 'our' means, so no name's needed. Ayun provided the names of the individuals she knew."

"That kind of thing is done for money, isn't it? We aren't a money-intensive economy."

"Yeah, but it's only a matter of time." More and more, our life-style was based on lunars. People bartered handmades and services, and made up the difference with lunars. The allocation system couldn't go on forever—our own success was dooming it.

She nodded. "Losing the frontier again. Well, handsome, we'd better get our pants on and get about the business of destroying it."

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I laughed. Yes, it was getting near time to show up at the office.

Mathilda Soames had time on her schedule Thursday afternoon. Her office was just three windows down from Sam's. She was a huge woman in the way some Pacific Islanders get, and probably hadn't gotten around easily down there. But lunar gravity had released her from the constraints of her flesh, and her delight in just being able to move around easily gave a twinkle to her eyes and a lift to her voice as well as other parts of her generous anatomy.

"Of course we'll do the comet expedition! It's a once in a decade, maybe once in a century thing—people can wait a couple of days for more housing; they'll never miss it. Where there's a will there's a way! Old Wu didn't tell me his decision, but that's the only thing that makes sense. And Ahmed's spaceship! When we demonstrate that, it will change space travel forever, and what a thing to try it on! Come on, aren't you excited?"

After five minutes of Mathilda, how could I not be? I grinned at her. "You make me wish I could go myself, but . . ."

"Why not, then? Ahmed and Talibah Fhasi are going themselves. It's only going to take about nine weeks."

I hadn't been following things. Voyages to planets took months. "Nine *weeks?*"

"Retrograde orbit, just about in the ecliptic. We accelerate for a couple of hours to catch it on the way in, ride it around perihelion to the orbit of Mercury, do a course correction that sends us back to the Moon, and decelerate."

I tried to add vectors in my head and didn't like the answers. Comet Angel would come close enough to the Moon, okay, but with a relative velocity of something like sixty kilometers per second. And that again to return to the Moon—the mass ratio required would mean a huge ship—Saturn Liner class. "He'd need to push something like *The Queen of Saturn* at a tenth of a gee!"

She grinned. "The mass of the *Edmund Halley* will be only two hundred tons."

"But that's not enough for the engines and radiators, let alone the fuel . . ."

She bobbed her head. "That's what's so neat about Ahmed's design! The main engines and the fuel supply stay on the Moon."

I'd read something, or seen something about this somewhere—but it hadn't sunk in. My memory for details not involved with a crime isn't any better than anyone else's. "How?" I asked.

"A mass beam reflector—instead of the spaceship throwing mass rearward, something behind throws mass at *it*. The mass hits the magnetic field of the ship, bounces off, and the ship gets pushed in the other direction."

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That sounded great, except for the one obvious problem. "Uh, how do you make sure the mass beam hits the ship?"

"Smart particles, like your dart rounds, but smaller—they home in on a laser beam from the ship and use tiny laser diode photon rockets instead of gas for course adjustments. Then, when they get near the ship, they blow up into a bunch of plasma that's reflected off the ship's magnetic field—a magnetic mirror."

"I see. No fuel tanks."

"Almost—all the *Edmund Halley* carries are small maneuvering engines and about a kilometer-per-second's worth of fuel, so forget about mass-ratio limitations. This will be the first passenger flight. He's already launched some robot probes. O'Reilly, this will change deep space transportation—and its economics—forever! Isn't it exciting?"

"Uh, yeah. I see." I'd been wondering if someone had killed Sam because of something he cut from the allocation. But maybe the problem was just the other way around. "If it works, it's going to upset a lot of applecarts. Someone might not want that, at least not for a while."

Mathilda's smile flickered and her eyes widened. "You think Sam's approval of Ahmed's project might have disappointed someone? Enough to kill him?"

"Maybe." I shrugged. "We get a lot of Earthies up here these days—they tend to think like that." Ten billion people lived down there in what was chaos, by our standards. A chaos that sent occasional messengers. "I should put an imp on you. It's a loss of privacy, but, well, maybe Sam was doing some business on the side that others might want you to continue. They might contact you."

"Really? Okay, then. Just don't stick a human with listening to it." She laughed. "I wouldn't want to bore him to death. It hasn't been the same since Carrie fixed me up with that hunk who gave me my first tour here." She shook her head and put on a wistful expression.

She was cracking a joke, but I remembered the bit about laughter being not far from tears. I wondered then about just how deep all Mathilda's bubbly enthusiasm went. None of my business, really, except that, as a cop, I notice things like that. People sometimes do things you don't expect.

Dr. Watson buzzed my wristcomp just then—audibly, so that Mathilda would know I was needed.

Mathilda raised a hand. "Go ahead. Use Sam's office if you want privacy. Have a nice day!"

"Thanks." I left her office with a smile.

Sam's body was long gone, but once the glow of Mathilda's personality wore off, I began to get a kind of ominous feeling in the place. Granted, Mathilda Soames had not known him long enough for a friendship to develop, but his demise hadn't seemed to bother her at all—indeed, she

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seemed to relish the power she had inherited. And she was obviously going to pursue different priorities. That, I reflected, could make her a target, too—considering Sam's playmates.

Dr. Watson's voice interrupted my thoughts, "Hart, someone just tried to kill Ayun Nu."

Ayun Nu was sitting impassively in a corner and a uniformed officer, blatantly armed, was on the balcony. Yeah, balcony—the minimum security, protective custody lock-up on the tenth floor had open balconies. This doesn't make sense unless you realized that here, "protective custody" was almost always a euphemism for putting someone on ice until legal could put an indictment together. No real protection was implied, and with cybernetic tagging, there was no need for physical barriers to keep track of people.

The officer pointed wordlessly to a big black stain on the basalt fiber wall panel. The dart was still stuck on the upper edge of it, a standard police round according to my wristcomp's query. Stolen ammo is hard to trace. I climbed on a chair and looked out from near the impact point. To clear the balcony and hit that high on the wall, it would have had to been shot from somewhere in the middle of South Park.

Ayun Nu flashed an ironic smile. "A bad shot. But they will keep trying and kill me some day."

"Not if we can help it," I said.

She shrugged. "After all the things I have done to survive, suddenly I find that survival does not matter so much anymore. I can do nothing more for myself, so what will happen, will happen. And yet, because of my confession, I am at peace. Do you know why?"

"No."

"I do not have to hurt anyone anymore, do not have to prey on them. That is a very heavy burden to put down, and I feel light because of it."

"I'm glad. Look, do you have any *specific* idea of who might be shooting at you?"

She shook her head. "I owed people. It could be one of them, or someone they hired."

"Where were you when it happened?"

Before I realized it, she got up and walked to the balcony and leaned back on the left side of the old pressure hatch. "I was here."

The uniformed officer acted faster than I did, putting his body between Ayun Nu and the outside while gently ushering her back into the safety of the room. She sat down with a quiet dignity, as if nothing of importance had occurred.

I decided not to say anything, and turned my attention back to the dart. It obviously hadn't even come close to Ayun. Unguided, then, and from forty meters the miss was about what you'd expect. Whoever shot it

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was either pretty incompetent, or not even trying. But the dart did have a lethal load; I recognized the smell of the serum, and there had to be a lot more than the normal dose to make a stain that big. Ayun Nu's indifference surprised me—or did she know she wasn't in any real danger?

"That may have been more of a message than a murder attempt."

"A messenger from the chaos that was my life and will be my death."

I opened my mouth, but she interrupted me. "I have told everything to your people. Named all my former friends and business colleagues, given them figures, drop places, market expectations. I will be killed for this. I accept this fate."

I glanced down at my wristcomp. "Dr. Watson, are any of the people Nu named on the Moon?"

"One, who was incarcerated at the time of the shooting. The others are not here, at least not under their own names and identities."

"Right." I turned back to Ayun Nu. "Do you know if Sam had dealings with any of them?"

She gave me a wintry little grin. "That may have been the problem. He would take gifts, but he would not give back. He made no deals."

That had been Sam's problem in lunar politics, too, I reflected. No deals. He made his assessment of what was good for the Cislunar Republic, or himself, or humanity in general, or for whatever reason—and then stuck to that. At least that was his reputation. But maybe it was that nobody here had his price.

My wristcomp toned. I flipped it up and looked at Tad's unhappy mug.

"Word's out—the media are all over me. Two shootings in two days in a place that gets maybe four or five in a year. Any progress?"

"I think Ayun just fell to the bottom of Dr. Watson's probability-ordered suspect list, but we don't have all the alibi witnesses firm yet. Meanwhile, my first suspicion is her friends and my second is someone who wants us to think it's her friends. And I got invited to go see the comet."

"Can't guarantee you a job after a year—we're over-staffed as it is."

"I'm told it will only take two months—a lucky trajectory and a new propulsion system."

"Still no go."

"At least three of my possible suspects might go." That was stretching things, since that three included Kate. But why stop at three, I thought? When you can't solve a crime by brute logical force, sometimes it will solve itself if you just create the right conditions. At any rate . . . "I'd have them all available for questioning without having to arrest anyone. And if I can take Ayun, I'd get her away from potential assassins."

That stopped Tad. "Interesting. We'll talk later." He signed off.

"Ayun, rather than wait here for someone to take shots at you, would you like to spend a few weeks checking out a comet? By the time we get back, my colleagues will have found the gun and the perpetrator."

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She shook her head. "Then they will send someone else." She looked out the balcony door, past the guard, perhaps past the roof. "But I have never been to a comet."

The sultry brunette reclined on the couch, martini in hand, and batted her eyes at me. Her sarong hung well below her naval and looked like it was painted onto her hips. Glittering jewels hung from said navel, ears, and nipples, and twinkled through the long, lustrous hair that draped, Godiva-like, over it all. Her face—high Slavic cheekbones, thick natural brows, a chin that was not too prominent, not too weak. Her eyes came from every part of the world and they bore into me with an exotic intensity. She laughed and each pulse of laughter sent inviting waves of sensuality down her hair and body.

"Imagine this," Linda said. "You and I in this place tonight. As if we lived together."

I had to laugh or cry—I'd been neglecting her. We were easy about that, and easy about her extra-curricular appetites, too. We'd gotten along, so far, in a relationship that raised eyebrows a little, even on the Moon. But that's something we shared—a sense of fun at raising eyebrows. We appealed to each other's sense of the bizarre—a rebellion against our putative norms. Dirty Harry and the whore.

But she wasn't really a whore—if pressed, Carrie's escorts would admit that sex was not part of their contracts, and that, for the most part, they were simply tour guides and convenient dates for unattached visitors. Also, the Cislunar Government was profoundly uninterested in people's sex lives, commercial or otherwise. But escorts could still have fun and pretend to be naughty.

I didn't hold up my end of the hard-boiled image, either. My gun usually stayed home—I had a government issue darter at the office if I needed one on a call; and I'd only used a gun off a target range twice in fifteen years. One of those times was on a rabid pet dog. Yeah, real tough.

But Linda and I clung to that exotic image like it was the only thing that mattered in our relationship, which maybe by now it was. Between my trying to get children to remember just when "Uncle Nu" had offered them his special kind of candy free and her playing Mary Poppins to a Near Side golf tour, we hadn't seen each other in a week. And that was typical.

"As if. I saw Kate."

Linda laughed again. "She told me. She wants to take you to a comet. Going?"

"The guy who murdered Sam covered himself with a simulation on Sam's office cybersystem. Three of the four people who might have loaded that sim, and who have plausible motives, are going on that trip, and one of them may be the next target herself. I'm kind of obligated."

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"That's six months or something, isn't it, Hart? Why don't you just move in with Kate now? You'll be seeing a lot more of her than me, now, won't you?"

She was teasing, I hoped. I forced a small chuckle. "Linda, you're sane. She's outside so much I think she'd like to try breathing vacuum."

"Kate space crazy? Wait until you meet Doris Thant!" Linda sighed. "Maybe I'm just not crazy enough for you, huh? Maybe we could go up to one of the farm domes tonight and douse the lights?"

"Maybe." My mind was still on the case. "I don't think Sam Wu was space crazy."

"No, he wasn't. Carrie says he was always talking about his family on Earth, and money."

"Money? *Earth* money?" Earth money represented goods and services at the bottom of a gravity well. It didn't translate well to the Moon, nor did our need-based allocation system with its froth of barter units translate well to Earth. The days when the Moon imported anything other than people and information were long ago.

"He sent money home to his family."

"Where did he get it?" I didn't like the thought I was beginning to get. Sam's impartiality was legendary—but had that impartiality been just between lunar interests?

"Carrie gives him the stuff the tourists give us. Lots of them just don't get the idea of doing something for your allocation, so we often end up taking a gift so we don't appear rude. Then Sam sends it home to his family. My golf pro tipped me a tenth of an E.U. That'll keep a family of four going for a month, back in China."

"That seems innocent enough." Tips to Carrie's escorts wouldn't be a pothole in Clavius compared to what might be going on—but they might show a channel. I made a mental apology to Sam's memory for what I'd been thinking—then continued to think it. A cop disease. "Did anyone keep books on this operation?"

"Why?"

"Uh, sociological research?"

"Gee, not that I know of. But wouldn't it all be on the system? It's all private comm, but Sam's dead. So if it has anything to do with his murder . . . couldn't you get to see his records?"

If this had been an Earth crime, the second place to look after the body would be the money trail. So maybe it *was* an Earth crime, just one that had happened to take place in my jurisdiction.

"Dr. Watson—what do I have to do to get into Sam's comm records? Text relating to money?"

"Sounds like you're going to be busy tonight," Linda said. "Guess I should see if Carrie has anything that needs attention."

"Uh, sure, honey. We'll try the farm dome Friday, okay? Ouch!"

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"It should heal by Friday. See ya."

Friday came and went; I was out interviewing kids when Linda came home that evening and left again. She left a message—since I wasn't available she thought she'd go give Carrie some more sympathy and a hand with the escort service.

I spent the evening with Dr. Watson. The list of people who wanted things from Sam Wu maybe bad enough to kill for them if he said "no," and who didn't have a good alibi for the time in which he was killed, was getting down to a manageable size. Ayun Nu, Ahmed Fhasi, Mathilda Soames, and Wu Chun-Hee were still on it—as were, technically, Kate, and Tad himself.

Tad had no alibi except his own cyberservant, and Sam had turned him down for a central prison colony, twice. There were half a million people on the Moon now, overwhelmingly bright, able, well-adjusted people, but half a million is a big number. Big enough for enough three-sigma cases to fill a good sized lock-up, and we had them scattered around in a half dozen colonies in rooms that were never meant to *be* lock-ups. But Sam had had other priorities—floods in China had left fifty million homeless, and we were dropping prefabs from the sky as fast as we could make them while Tad, and everyone else here, wanted more habitat.

That was ridiculous—with no good clues I'd begun to suspect *everyone*. Tad didn't do it. Kate didn't do it, and Sam didn't kill himself, After fifteen years in this business, my instinct had to be good for something.

Chun-Hee was a different matter. On the Moon, Sam Wu's number one son was his number one disappointment. Despite his own Anglicized name, Sam had given his son the traditional form—as if preparing him to return to honors forever denied his father. But Chun-Hee had never stuck with anything, and, at thirty, now spent most of his time playing computer games and watching pornography in his allocated room. Sam hadn't thought him ready to go back.

With Chun-Hee, the question of just how much money Sam had accumulated, and how, was significant—on Earth, with money, a person like Wu Chun-Hee would have position and power. On the Moon, he was useless and a figure of ridicule. Perhaps *Chun-Hee* had thought that he was ready.

I asked Dr. Watson to work on locating the Wu family fortune on Earth—mostly in banks in the Vancouver, North America, area.

The results were both astonishing and useless. The astonishing part was a total that might have been as high as a hundred billion North American dollars—nearly ten million United Nations E.U.'s! The useless part was that none of it was clearly traceable to deposits from Sam Wu.

So I tried it from the other end. Who on Earth benefited from Sam's

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allocation decisions? Most of what the Moon sent to Earth, by mass, was prefabricated basalt glass panels and other building materials. That was followed by aluminum, titanium, and, increasingly, grain. The last surprised me. "Dr. Watson, when did the Moon become an exporter of food?"

"In 2059. Agriculture dome construction and asteroidal water input have increased geometrically, while immigration has been held level and the lunar birth rate is at barely replacement level."

Like me and Linda, I thought. Fifteen years and nothing to show for it. "Back to the money, Watson."

It turned out that much of our largess was distributed through companies owned by the Red Army of the People's Republic of China—a state monopoly holding corporation that seldom marched anywhere. They got more per capita than anyone else. They spent literally billions on lobbyists, and a lot of the lobbyists were relatives of Sam Wu. At least ten of the lobbyists turned out to *be* Sam Wu, under different guises—he'd made thirty thousand E.U. himself. He had a mainland cousin who was a Major General in the Red Army—the equivalent of being on their board of directors.

Sam's personal fortune, in securities managed by the Victoria Branch of the Royal Bank of Canada, was about a billion dollars, close to a hundred thousand E.U. If Chun-Hee inherited that fortune, he could be a very important Terran, indeed.

I found him in the local gym doing squats with six times his normal Lunar weight. The barbell on the bench next to him was free, so I slipped in and did a few reps. I found myself staring at that picture of Sally Duluth, the first Moon-born Olympic weight lifting champion, doing a clean and jerk with about three times the mass I was lifting. I did a few more reps. Sally proved we could all claim our genetic birthright—if we were willing to work for it. Oof!

Speaking of claiming birthrights, Chun-Hee looked at me and recognized me. "Morning, officer."

It was after midnight. I rested the barbell in its stand and hung on, letting it support my tired arms for a change. "Morning." I was, I figured, in about as unthreatening a position as I could be for an interrogation.

"Anything about Dad?" he asked before I could go on. Let him talk, I thought.

"Some—got to keep quiet about it, of course. Anything on your end?"

"It's not fair—a man works so hard for something all his life, and it's gone. Just like that, gone. No one really liked him, but everyone respected him. He was such a good person when he let himself be, too, but no one saw that."

"You going to Earth?"

"Funeral in Vancouver, next week. He'll be buried in the family tomb."

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The look in Chun-Hee's eyes was one of pure determination. "When I come back, I will be strong enough to strangle whoever did it with my bare hands."

"Coming back?"

"Kate invited me on her comet expedition. It's risky, I know. But the computer stuff doesn't do it for me anymore—I need something more. I want to take risks now—life, meaning, reality . . . Kate could describe it. I don't know how to explain it."

The way I explained it was Kate doing cop work again. "So you're an astronomer now?"

"I'm going to be an astronomer—this time I mean to carry through. I swear on my father's name."

"We think your father had a lot of money on Earth."

"You don't know the half of it! I'll bet he had more Earth money than anyone else in the family. Investments. Interest. Commissions. Mom gave him some. But I gave my share of the inheritance to my cousins—what good does it do me here? This was my father's home, and it will be mine. He expected so much of me, and I let him down." He dropped the barbell and half a second later it hit with a thud. "But no longer. Think you'll catch the killer?"

Not here, it seemed. "This isn't a storybook. Right now, I'd guess we won't. But we can always get lucky. It won't be for lack of trying, Chun-Hee. Not on my part."

He smiled at me, but there were the beginnings of tears in the smile. "Have to go now," he said.

I'm supposed to know people, right? Yet in less than a week, my rock-firm assessment of Sam Wu and his son had done a flip-flop. I wondered if Sam had had any idea of what was going on in Chun-Hee's heart? Damn, how a little truth can corrode your world view!

Now, did Kate invite Chun-Hee on the expedition to help me, or out of compassion for Chun-Hee? Or in hopes that I'd find out what I'd just found out?

A pro job? Tongs? Ayun Nu was an artist of deception—how deep did the deceptions go?

Somehow it had gotten to be morning. I pulled my uniform shorts on, found my way out of the gym, and headed for the station on the East Park path—far above me, the lights along the focus of our curved trench ceilings brightened and birds in our parks began to sing. I wasn't tired.

The anteroom was empty and robot-clean. The night desk officer raised her eyebrow at my early arrival. I gave her a nod and went to my desk to see what Dr. Watson had unearthed.

It got a little involuntary whistle from me. If Sam's allocations had gone to Earth companies *per capita*, then the Red Army would have made ten million E.U.'s *less* than it had in selling what our robots and

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their supervisors sent "home." Where did it go? Sam had enough in one account to buy a dozen General's commissions in the Red Army.

Did enemies of the Red Army kill Sam? The Red Army had as many natural enemies as an elephant. I got a pile of sandwiches and pored over these lists of numbers and organizations until I was too tired to see straight. I couldn't figure it out. But I had begun to question their relevance—Sam had his hand in the cookie jar, yes, but as far as Earth was concerned, they were *his* cookies, he was being generous with them, and no one involved would benefit from his death. Quite to the contrary.

I gave up about 2000, called Linda, and headed home. The East Park path was lit dimly enough so that people could see the stars through the transparent trench roof, and I was too damn tired to be alert so I didn't see them coming. The assailants were fresh from Earth, rock hard, and full of beans—well, make that noodles. The first one put his hands on my shoulder—the muscles in his fingers were like iron.

"What?"

"You have Ayun Nu. We want her."

"I can't . . . oof!" The fist caught me in the belly and the nausea came instantly. My eyes clamped shut in pain. One of them had my hand, and a lance of agony went through my twisted thumb.

"You can and you will. Take us there now."

As my head cleared, I found myself doubled over, more by accident than on purpose. The hand on my shoulder was a little less vise-like, and my legs were coiled, ready to spring.

I moaned, a little more than I needed to, to give me some more time. "What . . . ever . . . you . . . want," I choked out as dramatically as I could. The grip was released as they patted me for the gun I wasn't carrying—and that was my chance. I jumped. They didn't anticipate that I would escape *up* and I was up five meters and into the tree before they realized what happened. I grabbed the first branch and vanished into the canopy.

"Dr. Watson?" I whispered to my wristcomp.

"The hue and cry is already underway."

As the seconds ticked off, the goons just stood there looking up into the trees, trying to decide where I was and whether to chase me. One of them had a gun out, holding it in his left hand. Then he must have gotten some kind of fix on me, because he pointed it right at my eye. It was a bullet gun, old-fashioned kind. I tried to fade back into the foliage.

I heard a loud snap from below and, almost simultaneously, a branch next to me fell, severed, exposing me. The next one, I figured, would get me. I dropped.

Just as I let go, the goon grabbed his gun arm with his other hand—he'd been hit by a dart. The gun fell, landing on the ground about the

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same time I did, but I went prone and acted *down* just in case that wasn't the only gun they had.

Then the place lit up, and a low pitched, incredibly authoritative voice rang through the woods. "Attention, this is the Police! Zhen Won-Lee, Xiang Kung-Zhek, drop your weapons. Put your hands up. Stay still!"

The lone standing goon spun around, and was met by blinding spotlights in every direction. I smiled to myself, thinking that half our force must have been there in the woods. An attack on a cop is a damn rare thing here; everyone in the force would want in on it. After a moment of consideration, the perp dropped his weapon and put his hands up.

An officer emerged from the trees and whipped tangles around the perp's wrists and ankles and another officer came out with a collapsible pole. I smiled; Zhen and Xiang were going to get the "wolf ride" back to the station, as in "Peter and the . . ."—hands and feet tied above the pole, bodies hung below; no jumping off that way. Low-gee cop work has its fun points.

"Hart?"

"Over here. I'm okay." I picked myself up off the ground and got blinded by the spots, but a hand reached out and guided me back behind the cop line. As my eyes cleared, I recognized Tad.

"Thanks." I couldn't think of anything else to say.

"Thank *you* for the evening's entertainment! That was a good shot."

"Huh? Not my shot. I wasn't carrying."

Tad looked puzzled and spoke to his wrist com. "The dart was a standard police round. Anyone discharge a weapon?"

Denials emerged from around the wood.

"Well," I said, trying to imagine who wouldn't want to take credit for what might have saved my life. "Thanks to whoever."

Someone had the humor to put the march from the Prokofiev classic over public audio as fifteen cops with hand-held spots marched along behind the four pole bearers with the goons swinging below on their tangles. Half the population in the colony had assembled in Central Park, and cheered. Kate was there, laughing and waving. I waved back, thinking of Linda, waiting at home. I was blowing it again.

The goons turned out to be from some Myanmar cult called "The Golden Path." Ayun Nu had, of course, not told us everything.

Another week of checking out alibis helped Ahmed Fhasi—his friend had finally been able to narrow the time down when his daughter admitted she had been approached by Ayun Nu (as "Uncle Nu") and made an appointment (not kept, but that was another matter). Her father had come home just before she left, and asked where she was going, and received a lie. But he remembered coming directly home from talking to Ahmed, and the daughter had put the time of her date with Ayun on her

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calendar. It was somewhat after the window of time in which Sam Wu could have been killed.

Dr. Watson and the Canadian authorities had dug up a lot more on Sam's activities. Sam had been biasing his allocations between various terrestrial customers in return for money paid to his family on Earth. What he'd done hadn't hurt us much, and he'd been given mind-boggling sums for doing it, but new lunar housing, exploration, asteroid mining, and even factory expansion had begun to go a little slower in favor of terrestrial construction materials.

Perhaps, I told myself, Sam felt he was acting in the broader interests of humankind, in addition to those of the Red Army Corporation and his family. What the hell was I going to tell Carrie? I didn't know, and the good part of going away on the comet expedition was that I could put that problem off.

It was 1500. I had two more nights with Linda before I left. Our relationship seemed to be running on inertia until I thought about all the time we'd been together and the things we'd seen. We'd talked about having a kid "when things get a little less crazy" as recently as last month. We ought to have something to show for fifteen years, I thought. Two more nights, and I hadn't made love with her in the two weeks since she'd returned from Near Side. And that had been another week. And Linda took her love-making seriously. My fault, and I knew it. There had been a time when I would have *made* time—but I just didn't seem to be doing that anymore.

Ahmed caught me, deep in thought, turning east on the path through Central Park near the moonball court. The dome lights glinted off his sweaty skull and he wore a colorful vest that managed to conceal most of the generous folds of flesh that peeked over the rim of his pleated walking shorts.

"We leave the day after tomorrow, Hartigan. You should come study the ship! Come see the galley Talibah has installed!"

I knew I should. It had been ten months since my last trip outside—I needed to requalify on vacuum gear, and here I was about to take a two-month ride on an experimental spaceship!

"Tomorrow afternoon. I'll walk over and use the time for my outside requal. Be there about 1400."

"Good. And then maybe you can help me explain things to this angry Chinese General who keeps calling from Earth. He thinks I'm supposed to be making an emigration ship and doesn't understand that the allocation didn't go that way."

"It didn't?"

Ahmed looked stage-innocent. "Not since Mathilda took over, it didn't. The promises of dead men are not binding, particularly if they are not promises to the Cislunar Citizens the dead man served!"

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"Yeah. Okay. See you out there at 1400."

He smiled, bobbed his head, then turned and glided majestically west through the central park.

"Dr. Watson, would you review the gun registration data." I asked as soon as he was out of earshot. I was sure someone had checked registrations, but I couldn't remember. Time to refresh the memory.

"Sixty people in Coriolis Municipality at the time had registered guns that might have fired the dart recovered from Ayun Nu's protective custody cell, including yourself, Tad, Kate, and Chun-Hee. In addition, seven weapons were reported missing, five of which have been subsequently recovered."

I instinctively patted my pocket. No; I had left the police gun I'd been using in my desk for the first time since the kidnap attempt. My personal should be at home. But, come to think of it, I might not have actually taken it home the last time I'd carried it, in which case it was in my locked desk drawer in my office—no, because I'd had it . . . sometimes, in a furball of activity when my mind is concentrating on something else . . . I hadn't seen the damn thing since the Wednesday before Sam's death, I realized. Dr. Watson's word "missing" hung over me like a guilt trip.

"Check mine now," I said. The gun had a police locater chip.

"It's next to your bed."

My paranoia will kill me some day. "Fine. Tell me again where Kate's gun was when Sam died?"

"Galileo reports that it was in her apartment safe."

I remembered that. "Untampered truth?"

"We of the cybernetic persuasion have ways of testing each other's honesty and continuity. Be assured that Kate's gun was in her safe when the Ayun Nu shooting took place as well."

"Tad's?"

"In *his* apartment safe."

"This is futile, isn't it?" Spinning my wheels in old data.

"Elementary, Officer O'Reilly. If I had seen anything significant in this data of possible suspicion, I would have told you two weeks ago. We need to update the public information file—queries are up, and Mayor Reynolds is getting questioned as to why we haven't made an arrest."

"Our prime suspect is in custody, but the evidence isn't conclusive, and we don't file a charge until it is. Tad knows that, and he can doctor it for the mayor." I felt a twinge of guilt at that. On the evidence, I'd pretty much eliminated our current prime suspect, and I didn't have a replacement yet. Things would be a mite less messy if neither the perp nor the public knew that just now—if the perp thought we were looking to pin it on Ayun Nu instead of just looking, his guard might go down.

I looked up. The trees, I thought, were getting very high—some of them

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half a century old now. There were various theories concerning how high they would get in lunar gravity.

A cheery Mathilda Soames called me before I got to my front door. "I've got good news and bad news." Clearly the balance was good news.

"Yes?"

"The bad news is I'm going to miss the comet expedition."

"But . . ." She wasn't very high on the suspect list—until now. Was there some reason she wanted to avoid our little party?

"The good news is, I'm running for office! Sam Wu's seat. If I win, Prime Minister Nakasone is going to let me keep my job! Everyone is so happy—I can't believe the number of friends I've made here, and they all want me to run! Will you endorse me? I've gotten so much done in just this last week—I mean, I'd been doing it all along, but I had to wait for Sam to make the decisions, and now I can just make the decisions *myself,* and it really isn't that hard. I hardly ever really have to say no; I just say wait a while, and I try to make things work. Of course, some people on Earth aren't very happy, but they don't vote here, do they? Anyway, how about it? Will you help me?"

I couldn't help smiling down at her image in the wristcomp. I was on my way home to a delicate situation with my companion of the last fifteen years, I was tired, she was a suspect who was giving me the slip in a way that left me no recovery whatsoever *and* she was notching her "motive" up into the exosphere, and yet I couldn't help smiling and I couldn't help saying, "Yes, fine, Mathilda. Put me on the list."

Sam must have said "no" to her several times. How had he done it? What does she do when and if someone says "no" to her? Damn, I told myself, sometimes you just have to be blunt and do your job.

"Mathilda, this is the wrong time and place. I know, but I've got no choice now. So, I'm sorry, understand? But for the record, where were you when Sam was killed?"

"Oh dear." The smile flickered—or maybe I just imagined that it flickered. "That was two weeks ago now, wasn't it? Afternoon? Oh dear. Just a minute."

The audio dropped off, and I watched her ask a question—to her cyberservant, I assumed. Then she turned back to me, and grinned. "I was with Prime Minister Nakasone for almost the entire afternoon. Oh, don't look that way at me, and that's a *very* flattering implication for someone of my . . . well . . . but I assure you it was *all* politics. A bit premature maybe, but one should always be prepared, and *look* what *happened!* You'll have no problems confirming that, I'm sure."

"I'm sure."

"You will have a very *lovely* trip, now, won't you?"

I nodded, and, as her face faded from the wristcomp, I started laughing.

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"Well!" Linda's voice said as I came in the door. She was elsewhere. The walls seemed bare, somehow. Pictures missing, familiar pieces of art gone, or moved. Another redecoration? A mood setting. Linda came from the bedroom. Dramatically bare. We had thirty hours before the *Edmund Halley*'s lift-off, and Linda was apparently set to make the most of them.

"Mathilda Soames," I said. "The case is an absolute disaster, but you can't finish a conversation with her without feeling like everything is going all right in the universe. Fortunately, it wears off."

"Off." Linda repeated, meaning my clothes. I complied, then I called up some video of some of the good times we'd had together, and brought a bottle of Coriolis Gardens Blush into the bedroom.

"Kate was here this afternoon," Linda said.

Both women played at bisexuality, a fad that was recurring these days. It, like some forms of modern art, was a taste a bit beyond me personally, but I felt only a bemused curiosity about what others did. "She's sweet," I said.

"She has a load of karma, Hart. Didn't say what, but she said she's going to tell you about it on your trip. Do you know what that's about?"

"Ahmed lied about getting mission approval before Sam died—and she probably knew it. If so, they probably conspired to misallocate production resources. But I'm not investigating that—it's a minor matter compared to the murder. And, given the entire story of those allocations, I don't think a jury would convict them. But our lover wanted something so bad she cheated for it, and she's been such a straight arrow all her life that it's likely bothering her a lot."

Linda grinned, shook her head, and drained her wine. I break rules too, her eyes said. "You'll go crazy if you try to control everything, you know. It's better art just to let things be what they will sometimes. I think you know what I mean. Firsts and lasts should be done in style." She filled her glass again, and cuddled into me. We knew each other's bodies well, our caresses were on target, our timing practiced. We took it very slow, sipping the wine as we went.

Linda's eyes went kind of moist after the second glass. "You won't fight it then?"

"I love you."

"Yeah, I know. Remember that—it may come in handy some day."

Then our lips and tongues and teeth took over, and we devoured each other, stimulating, tasting, teasing, being as outrageously intimate as we could think of being. We joined each other in several ways that gentle lunar gravity makes available, approaching culmination, then backing away to try another position. Finally she let me know when to stop holding back, and for a few precious seconds we yielded ourselves to pure nature. Linda's afterplay is wet, sloppy and full of humor, and this time, she

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didn't stop. My second release was almost painful, and left me utterly drained.

Then it was over. She pulled me off the bed for a final embrace and a final, almost sisterly, kiss on the cheek. We stood wordlessly naked before each other for a second or two, then she turned, and walked out of the bedroom.

"Linda?"

She motioned the door open and started out of the apartment.

"Keep in touch, okay?" She glistened for a moment in the door light, then vanished into the night.

I went to the door. I could have chased her, tried to talk things out, whimpered, begged, done something. In theory, I could have arrested her for indecent exposure. But something in me said no, this is the time to let go, and if I let her go freely, on her own terms, maybe someday she would come back. She'd said keep in touch. Someday again, maybe, if I didn't make an idiot of myself.

"Goodbye," I said to the blackness. Fifteen years of togetherness here danced in front of my eyes. It had gone by so quickly, and now a goodbye that didn't hurt any less for all its style.

Where the hell did she think she was going? Probably Carrie Wu's. Carrie was out of town, but Linda had access. It was only a short walk. She might shock a late night tourist, and add to the reputation of Carrie's escort service. I felt no anger—only empty, aching loss.

I stood there until the cool night air made me aware of my nakedness, motioned the door shut, and went back to the bedroom. I looked in the closets. Empty. I looked for her bag—and remembered that I hadn't seen it all evening. The bareness of the apartment explained itself now—her things were gone. What were mine, and some of ours, remained. Nothing remained here that she wanted.

I sat on the bed, cried, and ran my hands over the empty bed where she'd lain only minutes earlier. I wanted to call her. But I knew that wasn't what she wanted. Fifteen years.

This afternoon with Kate, now with me. Maybe she didn't expect us to come back from this trip, I thought—one or both of us—and so she was saying goodbye now. Or maybe she was giving us her blessing.

Maybe we shouldn't go. But I'd look pretty silly if I tried to cancel it now. Besides, I wasn't sure I could stop it. Kate was going. Ahmed was going. Chun-Hee was going. Even Ayun Nu. I was sure the answers to this were going with them, so I was going too. Maybe death was going along as well. The way I felt right then, I'm not sure I cared.

After several minutes of this, I decided I needed a distraction. I poured a scotch and turned to my video wall. "Dr. Watson. Show me Ahmed's spaceship."

The *Edmund Halley* was the strangest space vehicle I'd ever seen; it

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looked like an engagement ring with a big spherical stone. Thin legs held it all above the Moon's surface.

The ring was silver, about a meter thick and twenty-five meters in radius. Its main purpose was to house the current loop that created the magnetic field that would reflect the incoming mass flow. But auxiliary rocket ports dotted the ring as well, and reaction mass tanks lined its hollow interior.

The "stone" of the ring was a sphere ten meters in diameter set in a spidery silver bracing. I'd never given Linda a ring—she'd told me the night she'd moved in that any talk of marriage and she was gone. The stone of Ahmed's spaceship could rotate like the ball of a ballpoint pen to level its floor to any combination of spin and thrust. Nice trick.

There were three floors: an operations area on top, a circle of wedge-shaped cabins on the middle floor, circling the galley; and a lower floor with an air lock, an equipment room, and a covered swimming pool. Linda loved swimming pools. The pool could also serve as a radiation shelter.

My mind wasn't tracking. Right now, I needed an emotional shelter, not a radiation shelter.

"Dr. Watson, call Kate Samios."

Her grinning face replaced the *Halley,* and melted into a look of shocked concern as soon as she saw me. "Crap, she did it, didn't she? I'll be right over. Don't do anything dumb, okay?"

I just nodded. It was four in the morning.

The next morning, I watched Comet Angel point down toward the real *Edmund Halley,* sitting about two hundred meters from Ahmed's launch base. Particle accelerator tubes in turrets like ancient battleship guns pointed skyward nearby. An access tube ran to the spherical cabin from Ahmed's gantry. I could see the crew board as they passed by its portholes.

In addition to my "suspects," astronomer Brad Tau and two of his students were making the flight as passengers. Ahmed's wife was along as the back-up engineer. From where I was, the comet flowed right over the spacecraft, which was one reason I had come out here. It was the most spectacular comet ever seen from Earth, people were saying, and we were almost half a million kilometers closer with no air in the way. You need a horizon to properly appreciate a comet.

I caught a motion in the corner of my eye about the same time that three of my alarms started blinking. That was the other reason I had come out here; just in case more of Ayun Nu's friends came by. In a dark spacesuit, at night, with their lights off, and all sorts of roughly man-sized machinery around them, they'd be damn hard to spot. Good strategy, unless, of course they move and they forget that the guard, me in this case, doesn't have to.

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Sure enough, there they were, leaning far over in the long, low altitude lope that passed for running on the Moon, heading across the crater floor for the spacecraft. I checked the telltale lights in my helmet—my smart darts were ready, my outside issue launcher was ready. Whoever Madame Nu had herself involved with, I thought, they were as amateurish and out-of-place out here as she was.

"Dr. Watson, call back-up." They'd be here in five minutes.

I raised my arm, and spoke softly to the gun. "Acquire."

"Lock," it replied.

"Damn!" Two spikes of incredible pain stabbed my arm. I had to make a choice—the fact that there were two decided it; I could try to pull one dart out, but two? By some mammoth effort of will, aided by the fact that I was in pretty good shape and that the weight of the gun was almost irrelevant in the lunar gravity, I kept my aim steady enough and managed to choke out "Fire!" before every voluntary muscle in my body went limp.

"Dart assault!" Dr. Watson said.

Elementary. I thought a smile, but my lips were flaccid. I started to drool.

"I have hue and cry in progress. They'll not get far." Two more stabs of pain got me just in front of the elbow—but these were friendly. Dr. Watson, in charge of my suit computer, would be taking a sample of my blood, and if it were any of some seventy known nerve agents, an antidote would soon be running through my veins. I'd be able to move again in seconds.

I didn't get seconds. Arms grabbed me from each side. I wondered how long these perps had been out here, waiting for what they thought would be their moment. They pulled my wrists behind me and wrapped them with vacuum tape. Then the three of us started gliding toward the spaceship.

"Civilian self-defense trank," Dr. Watson said. "Nominal ten minute downtime with minimal side effects." These guys looked less and less like pro hoods to me. But they weren't dumb, not by a long shot. They just didn't know how the real bad guys did things. An unconnected start-up? A group of idealists with an agenda that had nothing to do with the usual sorts of crime? And why were they after Ayun Nu then? Or were they?

We passed the sprawling bodies of my targets, lying in the lunar dust—undoubtedly still conscious and terribly uncomfortable. My kidnappers stopped; one of them held me while the other straightened my targets out to make them more comfortable and said something to each of them, helmet to helmet. Then we were off again; they carried me between them in an effortless lope.

"Two minutes out," Tad's voice said. "Sorry, you were right. We should have had the backup on site." I wanted to look around for his exhaust plumes, but I couldn't move my head. In a spray of moon dust, we braked

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to a stop at the gantry's external door. "You will open up now!" Someone, presumably one of the people carrying me, said. Good accent, I thought, but still not a native English speaker.

One of Dr. Watson's ministrations was working and I felt my muscle tone returning. I willed myself to remain limp—my suit doc's antidart abilities were a piece of Cislunar police technology that wasn't common knowledge. The door silently swung in, revealing someone in a pressure suit labeled "Ahmed."

"Please," he said. "There must be . . ." A dart appeared in his chest. "Shit!" he said as he sank to the floor of the gantry airlock.

One of my captors closed the outer door manually while the other held me with my feet dangling a few centimeters above the floor. The entry cycle started without any action on their part that I could detect. My hands were bound behind me with vacuum tape—this is where some video star would come to life and subdue his two armed captors in a display of martial arts prowess. Just the kind of thing to start in a cycling air lock, right?

"For whatever it is worth," Dr. Watson told me, "half the Moon must be watching this little drama right now."

Cameras everywhere, I thought. Had to be one at the entrance to the airlock, and likely two inside. Dr. Watson's pickup on my helmet. Probably one on Ahmed's helmet as well, though it wouldn't have a very interesting view right now. For a cop, this was embarrassing—and I thanked providence for the privacy of my helmet.

"Release the helmet," one of the goons said, pushing the business end of a dart gun in my gut.

The guy behind me took it off. Goodbye, Dr. Watson, goodbye Tad, at least until I could get at my wristcomp.

The other guy was tying up Ahmed and taking his helmet off.

This done, they opened the inner airlock door; there was no one in the gantry tube. I saw the police hopper land through the access tube window as the kidnappers carried us into the *Halley*. They shut the *Halley*'s lock doors manually. There was a loud clank as the access tube disengaged. Standoff, I figured, until I could move freely.

They tied us up with my police tangles, and left us in the equipment area just inside the airlock. Then, they headed up the central pole.

I heard a couple of shouts of surprise echo from the operations area on the upper deck, then nothing. I hoped against hope that Ayun Nu was in her mid-deck cabin.

It was time to stop playing possum. I spoke too softly to be heard above, but easily loud enough for the spacecraft's audio system. "*Edmund Halley,* this is Coriolis Municipality Public Safety Officer Hartigan O'Reilly. If you hear me, please dim one of the lights in this room."

Nothing happened. My police override should have gotten through.

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The ship rocked for a moment, then, silently, my weight began to increase—up to about twice lunar normal, I figured. And it stayed there—usually a rocket fires for a few minutes, then you're back to zero gee or spin gravity. This kept on in utter silence—it was like riding a maglev launched spacecraft, but there were no rails pointed where we were going. Half an hour went by.

Someone came down the tube on a small, open-frame platform that ran on the central pole. His skin was a deep brown and his features vaguely Eurasian. He looked distinctly unhappy, and directed that unhappy look in my direction. I recognized him instantly—one of Ayun Nu's gang whom she'd identified for us. He was supposed to be on Earth.

"Where is Ayun Nu?"

"I don't know. Where are we going?"

"We are supposed to be going to Mars."

"Mars!"

"We have friends there."

"How are you going to stop? There's no deceleration beam anywhere near Mars. This ship has to come back to the Moon!"

For a moment, he looked confused. Then his eyes narrowed. "Shut up. You aren't fooling anyone. You're going upstairs."

He came over and hoisted me onto the lift. Then he got Ahmed. Ahmed groaned—he was coming out from under the trank. The three of us rode up the pole to the operations deck. Ahmed's idea of ops looked like a hotel lobby—no consoles, dials, or anything resembling controls—just a ring of comfortable lightweight chairs and couches. The spherical hull formed an apparently transparent dome overhead that reached down to eye level. The ring part of the ship arched across this, reaching an elevation of about 45 degrees. In its center was a brilliant glow with a spike reaching toward our zenith and a fan spreading down to our horizon. Its brilliance was eclipsed every thirty seconds or so as the sun swung by.

My weight felt about lunar normal, and from the angle of the ring, I guessed that our acceleration must have been about 40 percent of that—much less than at lift off. Then it dawned on me then that we weren't headed toward Mars. If we were headed out, toward Mars, this part of the ship would be in shadow. But we were headed sunward, apparently still on course toward the comet. Our hijackers wouldn't be happy with that.

Talibah Fhasi lay on one of the couches with a dart in her arm. Her eyes were open.

The goon on the operations deck said something in a foreign language.

Amateurs, I thought. Getting stuck and paralyzed isn't pleasant. It can make someone *not* do just about anything, but making people *do* something they don't want to do is another matter.

The goon moved my tangled body onto another open seat.

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Everyone was there—Kate and Chun-Hee were tangled to seats on the other side of the access tube entrance from myself and the Fhasis. Brad Tau and his three students in their university tightsuits sat halfway around the room between us.

Three? I did a double take. The third young "male" student was Ayun Nu, in disguise again.

"We appear to be on a course to the comet," I said as our captors stood around with their dart guns, apparently helpless. "Does one of you want to explain what this is all about? You don't seem to be the usual kind of criminal."

That produced a few words back and forth in the unknown language.

The taller of the two young kidnappers, and their apparent leader, answered. "We are members of the Golden Path Temple in Rangoon. Ayun Nu embezzled funds. Our leader asked for volunteers to find her, end her existence, and recover the funds if possible."

Oh? "Did it ever occur to you," I asked, "that there are police, even on the Moon, and that arresting embezzlers is part of our work?"

They shrugged. "It doesn't work that way in Myanmar."

"Well, it does here. Who told you the funds she took were embezzled?"

They looked at each other, puzzled. "Our leader," said the tall one.

"Let me contact my office, and we will see if we can work out the problem. If, and I repeat, *if,* you put those guns down, and cooperate fully from here on out, you will probably not be prosecuted to the extent that you might otherwise be. Also, if funds were embezzled, and we can find out what account they are in, we can probably arrange the return of whatever is left."

There was another exchange. I risked a glance at Ayun Nu for a hint of a reaction to what they were saying. Her face was still and expressionless.

Finally, the leader shrugged. "It appears that we have no better course of action." He pulled out my wristcomp, and showed it to me, which showed me to Dr. Watson. My tangles relaxed instantly. When I got them off, the leader handed me their weapons.

"Whew!" Kate exclaimed.

I peeled my tightsuit down to my waist to get my arm free, removed my arm band, put it on Talibah's arm, and turned Dr. Watson loose on her. In a minute, she was starting to come out of it. I took the arm band back and went over to Ahmed—he was already moving.

"Ahmed," I said, "You with us? Take some deep breaths."

He shook himself and wheezed a couple of lungfuls in and out, trying to throw off the effects of the trank. "Yes," he said in a voice that was still slurred.

"Can you get us back to the Moon?"

"Hart!" shouted Kate. "Why? We'll be back in a few weeks anyway. We

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can take a couple more people. It won't make any difference if they don't get back right away. This is our only chance at a wild comet, maybe forever! We can't pass it up!"

What was she thinking of? Things were far too dicey to go comet-hunting. "Sometimes you have to, Kate. Sorry. Ahmed?"

Ahmed nodded and said some words in what might have been Arabic, or Persian. His voice was growing clearer as the drug wore off. Then he frowned. "The computer isn't responding. Talibah?"

"Ahmed?"

They spoke for a minute.

"The computer is not responding to navigational commands. It says it does not know why—it is as if those parts of its consciousness have been removed from it. It is too late now, anyway."

"Too late?" I asked.

As if in response, the light in the center of the ring began to fade, and the cabin rotated until the ring crossed our dome directly overhead. The beam drive had done its work, and we were now coasting to our destination under spin gee.

"We carry enough reaction mass," Ahmed said, "to rendezvous with the comet and make minor course corrections. We are now going too fast to slow down and return—our fastest way back is to continue with the comet rendezvous."

"Well, Kate," I said. "It looks like we're going to your wild comet anyway."

The look on her face was one of relief—and something else. I wasn't sure what. Was I even starting to suspect Kate? No, she'd been hijacked with everyone else, and her relief seemed real.

"Do you mean," the lead goon said, "that we can't go back? We can't go to Mars?" He looked totally sincere, too.

I gave him an icy look. "In a word, yes. We are going around the sun with the comet. As originally planned."

"How long?"

"About two months."

Now he looked sincerely confused. "That *fast* . . ." He sat down and looked at the glowing sheet of plasma bouncing off our magnetic field. "But that changes everything . . ."

Lousy research, Golden Path—welcome to the new reality, kid, I thought.

An attention tone filled the room. "This is the *Halley* speaking. I have full control now."

I looked Ahmed in the eye. He'd already lied once for this project. At least once. "Give Dr. Watson full access to check out that parasite program." Clearly, the Golden Path hadn't done it.

Ahmed frowned and said some words in that language of his.

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"I have access," Dr. Watson said, from the ship's audio system. "The parasite program is gone, but I can trace its approximate size and defense strategies from what the *Halley* remembers of it. It is similar to the simulation program that was on Sam Wu's office system."

"Hart," Tad said from my cabin screen a couple of minutes after I finished explaining everything—lightspeed time lag; we'd gone that far already. "It probably won't surprise you to know that we get a completely different story from our agents in Rangoon. The Golden Path Temple probably earns half its income from drug sales—but only a few of the inner circle know that. They aren't that big and aren't that experienced—something some students started maybe five years ago. Several of the people Ayun Nu named are part of that inner circle—but she never mentioned the Golden Path Temple itself."

"Yeah, Tad. I was kind of hoping it was an invention."

Another wait for my words to reach him and for him to respond. We had, I realized, gone out at the highest acceleration any human ship had ever sustained for this length of time. The big outer system liners took a couple of weeks or more to get up to this kind of speed; the *Halley* could do it in an hour. "No," Tad finally replied, "the two we have in custody here confirm most of this. They deal drugs, but it's all mixed in with some kind of fatalist, Taoist philosophy that some of them take more seriously than others. Lots of true believers, including, maybe, their leader. I'd say Ayun Nu wasn't ready to desert him yet."

"Even with these kids out to kill her?" What Kate said about some things being more important than life came to mind. Maybe we *were* dealing with religious fanatics. I waited for the reply.

"Are they?" Tad asked. "With standard trank darts? The assassination attempt could have been a ploy and she might still be trying to cover for them."

"The one I pulled out of the wall of her detent wasn't standard." I should say something more, I thought, to make this conversation efficient, but I couldn't think of it, and waited for Tad's answer.

"Noted," he replied. "But did they shoot it? Another thing, Hart. How did you guys get away? You're going to the comet instead of Mars. That's why we didn't physically interfere with the propulsion beam—we figured you'd maintained control somehow and were just giving the perps enough rope to hang themselves."

"We were hijacked, but Talibah couldn't change the destination, so they shot her when they realized it. She's okay now. Ahmed tried too, but the ship wouldn't accept changes until the comet rendezvous trajectory was a done deal. There was a parasite program. The goons denied doing it." Another idea struck me. "Not your doing, was it?"

We'd been gone before any cops could get to Ahmed's site physically.

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But software moves at the speed of light—if they'd been able to load something before we left, it would have ensured that we'd come back.

Tad looked off stage a moment before he replied. "Not us. If we could have gotten control of Ahmed's computers, we would have aborted the launch entirely. Someone else's program took charge of his base system, too. There are some hints that that software was built the same way the simulation that took over Sam Wu's computer was built."

"Same here. Golden Path?. Maybe they just wanted to get Ayun Nu to Mars?" Computer programmers, even good ones, I thought, can be pretty weird sometimes. Maybe weird enough to be part of a cult like that.

Tad shook his head. "That operation just doesn't look sophisticated enough for those kids. I'm more inclined to suspect Ayun Nu, herself."

It made sense. "Tad, are we getting anything from the U.N. on her? Or from Myanmar?"

Working with the U.N. was hard enough for the Cislunar Republic; there were still some people alive who remembered the siege of L1. But Myanmar wasn't even *in* the U.N. anymore, didn't follow U.N. financial regulations, drug laws, or anything else. So they were rich as sin.

"Some," Tad replied. "The Golden Path is a thorn in the side of the Myanmar government, too, and they've been cooperating quietly, despite their diplomatic problems. I'll dump it to you."

At the wide end of my pie-slice cabin in the *Halley* was a narrow Dutch bed with overhead and underneath storage that doubled as a couch. Next to this was a combined desk/night table and a chair. There was just enough floor space to walk around this to get to the door at the narrow end. I sat on the bed while Ayun Nu sat on the chair, still looking like a male student.

"I must die for my betrayal, I know that," she said. "But I don't have the courage to face it."

"You don't have to die. Now just what did you betray?"

"The leader of the Golden Path. I was lost, surviving on the street by my wits. He showed me how to live by giving happiness. We feed the poor with what we earn from selling happiness, did you know that? I was poor and hungry. You say this is a not a good way to live. I do not know, but people who are never happy were at least happy for a few hours, and I had a place to sleep. So I served him. He has this cosmic vision that everyone would live his way because it was how the universe worked. So we are going to take his teachings to the Moon and Mars and everywhere. But what I had to do was dishonest here and I failed, so I got caught, and I tried to save myself by revealing others who you would catch anyway. He has decided my existence must end. He is right, but I am not strong enough to face it. You should not protect me—that way it will just happen when I am not looking. I do not need courage for that."

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"Not on my watch. Now, did you kill Sam Wu?"

"No."

We had a pattern here. Ayun Nu would lie, I'd believe her, she'd get caught and confess so sincerely that I'd believe her again. Then she'd get caught in a lie again. And still, I believed her now because she wanted nothing for herself, except that she'd shown over and over again that she'd do anything to survive.

"Okay, Ayun Nu, this is being recorded, and your decision will have the force of a legally binding contract. Will you voluntarily submit to chemically assisted interrogation when we return?"

"No."

"Why not?"

"I know too much of what my leader has done, things that this Moon and the Earth are not ready to understand. That knowledge must die with me."

"And you expect me to believe that you didn't kill Sam Wu?"

She shook her small, severe face gravely. "No, I do not expect you to believe me. But what else can I say when it is the truth? I have never killed anyone. Can you confirm that?"

I could and had, to the best of the Myanmar authorities' knowledge. "Most murders are first times. I try to make them last times, too."

"The leader of the Golden Path has many hands, as you have seen. I told him what Sam did, of course. You should reveal me. Then, perhaps, I will be strangled. I should stop trying to avoid fate."

I didn't think for a moment that our two young Golden Path goons had anything to do with Sam's death—but then, maybe that's what I was supposed to think. Well, I could keep the Golden Path goons tranked, or tangled, or something for the next two months. But the longer I could put that off, the better.

"I can't allow that, and I don't have a jail on this thing to lock up your would-be murderers."

"Then I shall keep my cover and learn astronomy until the inevitable happens. Are we done?"

"Yeah, we're done."

Evening, ship time. I was alone in my cabin when Tad called. "Hart, Tad. I don't have time for a time-lag conversation—this is just to let you know that there are several programmers in Golden Path with the capability to do the sim and the parasite programs on Ahmed's computers, but we don't have a shred of evidence that any of them did so. Also, one of Wu Chun-Hee's cousins is a cybernetics student at Coriolis U who has pulled a couple of pranks that are small-scale versions of the sim. He's taking an intro astronomy course from Brad Tau, knows both your students, and spends a lot of time at the observatory with Kate. But he doesn't know the

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Fhasis. He says he'll help us, but he's in exams now, asked for another couple of days. Won't say any more than that. So I'm not sure whether he did something, or is shielding someone, or is just a little wary of establishment cops. He does have exams, so we're going to give him the couple of days. Another thing, which I'm sure you've thought of, but which just occurred to me, is that one way of getting rid of Ayun Nu is to get rid of the *Halley,* period. Your goons may be fanatics, or they may be expendable. Look for bombs. And be careful."

We'd left the Moon just before the Comet Angel crossed Earth's orbit, so it was chasing us in physical space while we chased it in velocity space. Since the *Halley* could only be pushed *away* from the Moon, there was a crossing angle to make up—about fifty meters per second. We had lasers, our reactors, and reaction mass for that. What I saw was a ball of white-hot plasma wandering around the center of the ring shooting a comet tail of its own off at right angles to the real thing.

Ahmed saw beauty. "You see, the computer juggles the main field and the electron beam to neutralize the ion exhaust at *just* the right point to compensate for the ship's spin and everything else so that it pushes in just the right direction. It is working so beautifully!"

Brad Tau seemed mesmerized, too. The short Eurasian astronomer ran a hand through his shiny, straight black hair. "Wonderful, Ahmed! This whole thing is wonderful! I don't believe I'm in a spaceship."

Ahmed beamed. "Why should a spaceship bridge look like a two-hundred-year old steamship bridge, any more than a steamship bridge looks like a poop deck? This is all different. I want the design to reflect that."

It was a break with the past—no one had flown a big ship manually for decades, but, until now, they all *looked* as if they could be flown in an emergency in a style that had become as anachronistic as the sail yards on steamships a couple of centuries ago. But now consoles with buttons and computer screens and so on were gone. Ahmed had made a total break.

"Our velocities are matched. We are ready to start the approach."

"Now we get to see what we have been chasing," Ahmed said, and waved an arm as if he were an old-time potentate summoning his servants.

"But I can see the comet," one of our Golden Path passengers said.

I smiled. Yes, but.

The comet, a tiny, dim point of light, appeared to spiral up to our zenith as the spacecraft silently began to tilt its spin axis away from the sun. The shadow line walked across the floor, up the furniture, then vanished abruptly. The sun set for our tiny world, and our irises began to open up to the glory of the universe.

"Behold!" Ahmed said, picking his time exquisitely.

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The tiny point brightened and a soft glow appeared around it. A few other bright stars began to appear as the coma grew and grew. The twin tail faded in—a vast shimmering bluish sheet curving away from the sun and a long, yellowish cloud that transected the coma and actually projected a little ahead of the comet.

"Oh, God." Kate said. "Oh, God!" There were tears in her eyes.

Ayun Nu's face looked like thirty years had fallen away, and she was a ten-year-old in a candy store. "I didn't know," she said softly, "I didn't know." The comet was easily as bright as the full Earth, I thought. I could see Earth, still a tiny disk, shining through the tail, Jupiter, and maybe Betelgeuse, Rigel, and Aldebaran. Sirius lay below it. Regulus and Venus lay ahead of it.

"Feast your eyes now," Brad said. "In a few hours, we'll be too close to the trees to see the forest. Not as dramatic then, I suspect."

He was wrong. While the view changed as we got closer, and we lost some features, others appeared. Plumes of gas and dust arced away from the comet, tracing fanciful figures in its sky, everchanging as the comet rotated. It was like watching the sea—we sat there and watched and watched. As we got closer, though, things started to get really hazy.

"Our dome is dusty," Talibah said. "The sun is nice and quiet today. Does anyone want to come and help me dust it off?"

"Manually?"

"We don't have to do it manually, but we are, eventually, going outside are we not? I think this is a good place to find out how well our suits handle all this dust."

"I would," Chun-Hee said. Of all the suspects, he had been the most quiet. Did I follow him, and leave the others alone?

"Me, too," came from one of Brad's students followed by a cacophony of volunteering.

"Just two this first time," Ahmed said, suddenly sounding more like the master of his ship than the impresario. "Chun-Hee spoke first." He added some Arabic, and Talibah nodded seriously.

They made an odd couple outside, Talibah short and round, Chun-Hee tall and willowy. Armed with air guns, they cleared the dome quickly. I was watching them when Ahmed came up to me.

"Talibah requests that you come outside. Chun-Hee has something to say."

I made an instant decision. "Okay. Ahmed, be very careful with everyone."

"On my ship, one does not tell the captain to be careful." But he said it with a twinkle in his eye.

I nodded. Of course, if "it" was Ahmed, working with Talibah of course, and maybe Chun-Hee, my goose was cooked. But that didn't make sense. They had too much to lose.

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Who didn't have much to lose? I glanced over at Ayun Nu. "Kate?"

Kate looked at me, then followed my gaze to Ayun and nodded.

"I'll be outside in five minutes," I told Ahmed. I had Dr. Watson do a check on my tightsuit while I took the pole down to the airlock deck. I stepped into my coveralls, shrugged on my backpack, donned my helmet and activated the smart seal. I hooked up the umbilical, and Dr. Watson did a two-bar pressure check and pronounced everything right. Inner door, two minute pump-down, attach tether, outer door. I beat my advertised time by a minute, then blew it staring at the cometscape after I hauled myself up to the top of the spherical crew module and into the darkness.

Someone grabbed me from behind and pushed a helmet against mine.

"Officer O'Reilly?"

"Chun-Hee? Careful—you can panic someone like that."

"Apologies. A friend called me from Coriolis last night, about some software he wrote."

"What do you know about it?"

"Only that you could only hurt yourself and someone you care about if you press that lead."

"Is that a threat?"

"No, no, nothing like that. It's just that you really don't want to *know*. Not now. I say this as a friend. You will know in two more days."

Someone I cared about? "Linda?" Was *that* why she'd opted out now? My gun—for God's sake, Linda had access to my *gun!* What could she have against Sam? The money? Had Sam been pressing Linda, or pressing Carrie to press Linda to get more tips from her clients? "Does this have something to do with Linda?"

But Chun-Hee pulled his helmet away from mine as Talibah came over to us. "I've told you all I know," he said.

A small knot was forming in my stomach. Linda could be involved, or it could be a threat against Linda, or conceivably Tad, but, but . . . connections were adding up and a common denominator was forming in my mind. I had been blind, willfully blind. Or I was about to be the most unfaithful, unworthy friend I could ever conceive of being. Cops shouldn't have friends, dammit.

Item: Ahmed and Talibah didn't need an outside programmer to rig their own system—but the same programmer had probably done the Sam Wu sim, the launch base sim, and the *Halley* sim. There was that word, "probably." But Ahmed and Talibah were probably cleared.

Item: Buying two more days would get Chun-Hee nothing, as far as I could see. But wait, there were still straws to grasp. "Dr. Watson, check the progress of Sam's estate. See if there's anything that's supposed to happen in the next two days that wouldn't happen if we arrested Chun-Hee."

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Item: The Golden Path was either a wannabe minor drug cartel, or a cult, or both—but not the kind of strong-arm organization to carry off an assassination. The kind of darts that were fired at Sam and at Ayun Nu, they were fired from a professional, heavy-caliber weapon—twice the dose volume, higher mass, higher momentum—not the kind of weapons the Golden Path people had been carrying. The shot at Ayun Nu was probably—that word again—a diversion that was closer to its target than perhaps the diverter knew. An effort to scare Ayun Nu into fleeing, perhaps.

But Ayun Nu herself remained an unknown—a woman with many faces and perhaps as many irons in the fire.

Item: Mathilda Soames had an iron-clad alibi.

Item: Tad didn't have a good enough motive.

Two people, not one, had all the necessary common denominators, just barely. Ayun Nu . . . and Kate Samios. I looked up at the comet—a huge twisted black mountain with gaping holes spouting ghostly streams of gas released from a prison as old as the solar system, if not older. It was sent here by some chaotic happenstance in the far outer solar system, a traditional portent of disaster, a messenger of chaos. In complex systems, everything that happens is a billion billion to one shot or worse—weird things shouldn't surprise us. I had a scenario, at last, that made sense. They were both involved—but maybe without the other knowing.

"The Canadians say there is nothing," Dr. Watson reported, "close to resolution concerning the Wu estate. The Canadian Region of North America has it tied up in claims, and Chun-Hee knows it."

"Right."

I tried to imagine Kate's surprise as she walked into Sam's office, and found him already dead.

But Kate couldn't precipitously undo the sim she had already installed to cover her *own* attempt; so she had unwittingly covered Ayun's tracks. At least I assumed it was unwitting—or was Kate's animosity to Ayun an act?

I went right to my cabin from the airlock and asked Kate to come see me. Hating myself, I took my police issue dart gun and stuck it in my pocket. No good, I was still in vacuum tights. I messed my bunk blanket, hid the gun in a fold, and sat beside it just as the door hissed and Kate walked in.

"Chun-Hee?" she asked.

"Chun-Hee's programmer friend."

She winced. I thought I saw tears start to form.

"Hart, I couldn't miss this chance. I had to make sure we launched."

"The sim in Sam's office?"

She stared at me for a moment, then sighed. "Yeah. It would have shown him approving the expedition regardless of what he actually said.

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We'd have been gone before he realized what we'd done. Then Ayun Nu, or someone from the Golden Path, came along and *killed* him. Hart, there's a lot more at stake here than the Golden Path's access to the Moon's children. I think Ayun Nu's a double agent for the Red Army Corporation."

"What?"

"Hart, think about it. Her mission was to make sure we *didn't* go. The drug thing was a cover—that's why she was so obvious about it. She tried to lean on Sam to say no and it didn't work. Ahmed *wasn't* lying. She failed, so, goodbye Sam. Then she arranged the phony assassination attempt to get her on this ship—if you hadn't suggested that she come, she would have."

It almost made sense. "So where does that leave us?"

"Hart, she *has* to sabotage this mission, even at the cost of her own life, and ours. The Red Army wants more Mars colony ships, not comet expeditions and propulsion experiments. If this fails, they'll control our production for several more years. I'll bet they are even holding Ayun's family hostage."

I remembered the haunted look in the Myanmar woman's eyes. But . . . "Kate, even if that's right, everyone on the Moon knows how much you wanted this comet expedition, and with the computer stuff, now I've got to treat you like a prime suspect. Look at it from my point of view. I'm really sorry, I'll try to make it up to you once this is settled."

She sat on the chair in front of my desk, straddling it, leaning on its back with her arms. We looked at each other. She shook a strand of hair from her eye.

"Then take me into custody after I come back from the comet. I'm going down with Brad tomorrow. You've got to give me that much. Hartigan O'Reilly, you owe me. And, damn it, whatever you think I've done, you've got to put a lock on Ayun Nu!"

"Kate, I've got nothing to hold her with. Anyway, she's helpless here."

"You're wrong. I'm a woman, I know. She's an onion, and you aren't anywhere near her core. She's dangerous. We have to get her out of here!"

I shook my head. "I can't let you do that, Kate."

She closed her eyes for a moment. "Damn it, Hart, before you get so hard over that, I've got one more thing to show you."

I was off-guard and she was quicker than I was, but I was faster, and we ended up with me looking down the smooth housing of my police issue darter and over the sights at what she had to show me. I knew exactly what I was looking at, too, right down to the three scratches on the black plastic cover.

"My gun. Kate, what are you doing with my gun?"

"Linda loaned it to me weeks ago for target practice; she said you hard-

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ly ever used it. I took it when I needed it, and left mine home, just in case someone checked. We had an understanding. I didn't tell her the specifics."

"Why?"

"She loves me, in her exotic way, and I did what she wanted. Her clients don't, you know. They don't offer and she's afraid to ask—after all, she's supposed to be pleasing *them*."

"But . . ." I stopped. I'd checked—she wouldn't have known we could locate our individual weapons that way. But fate had helped her. My gun *was* in my bedroom last Wednesday—but in Kate's bag, not my lock-up. "You shot at Ayun? With my gun?"

"Just to scare her into revealing herself. And I shot one of the goons trying to kidnap you, too."

Damn. It seemed I owed her even more than Hadley Rill. I should turn this case over to someone else. As soon as we got back. *If* we got back. "Kate . . ."

"Just listen to me. Ayun Nu has been a failure—but she can redeem herself and her family by destroying this expedition, by shutting down the manufacture of exploration ships for years, and covering the tracks of the people that really sent her. Or she can redeem herself by dying in the attempt. That's her fate, she's accepted it, and she's going to do it.

"Except that I'm not going to wait for her to blow me and my dream up! I'm going to take her down to the comet right now, and there's going to be an accident."

It whirled in my mind—I couldn't piece it all together the way she could, couldn't make those leaps of intuition. It wasn't airtight in my mind. "Kate, no. You can't!"

"Yes, I can, because if I *don't,* she's going to succeed. You can't charge her. You can't detain her on suspicion. You can't do *anything* with her with your blasted cislunar law. But Sam is dead, and we're in danger. So I'm going. All I'm asking is that you don't get in the way. Then I'll have been to the comet, and the ship will be safe, and the exploration program won't have a hiatus. Then you can do what you want to me."

"Dammit, Kate, I don't *want* to!"

"Dammit yourself." We glared at each other. Then she said, "Sorry. You didn't deserve that. I should have said, do what you think you have to do to me." She sighed. "We've got a standoff here. Can we talk this through?" She started to lower her gun.

I don't know why we do the things we do. I let my gun hand fall to my side.

"Hart, thanks for everything. Especially Hadley Rill."

I heard the word "Rill" just as the dart hit. By reflex, I tried to reach it and tear it out, but Kate grabbed my hand and stopped me. Maybe I could have, should have, grabbed the dart anyway. But I stopped resist-

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ing. She might be right. Having Ayun aboard might be like having a live bomb I couldn't do anything about. There were exigencies. And, like every cop, I suppose I wanted to see the books balanced neatly, and not wait for years of argument to maybe result in something else.

"Lie down, kid," she said softly. "Otherwise you'll be very uncomfortable."

I did, slowly, falling more than lying at the last. Effective stuff—I'd gone under in what, five seconds. Then she kissed me, turned my head to the viewscreen, and left, my gun in her hand.

So I had a full view of what happened from my bunk. Two figures, one tied, rode their suit jets down to the comet. For twenty minutes they got smaller and smaller, and the comet, by comparison, got bigger and bigger. Then they were gone. I heard no sound. No communication.

The trank wore off. I could move my legs, then my arms, then my fingers. They say that once you can move your fingers, it's safe to stand. I took a couple of deep breaths, and soon was back to normal. Then it was out the door and up to the ops room.

The ship was littered with tranquilized people—I'd just been the first. So I went, one to the other, like some kind of high-tech faith healer, making the paralyzed walk again by laying a antidote shot on them.

Then I got Dr. Watson on my wristcomp to work at releasing *Sir Edmund* from whatever cybernetic trap Kate's latest cybernetic agent had sprung. As soon as the spaceship AI program came on line, he told us a space suit was coming in. Just one. Still no comm.

"Are you going to arrest her?" Chun-Hee asked.

"We can't have individuals running around executing people." I felt like a heel. I felt like a co-conspirator, though, really, she'd given me no choice. "Why isn't she talking to us?"

Then the lock cycled open, and out walked a trembling Ayun Nu—holding my gun, the one Kate took. Everyone froze, uncomprehending.

Then I went for my issue gun, thinking I might get lucky, but before I got it, the sobbing woman reached out and offered me her gun—*my* old gun. Then it hit me hard. Kate was still down there.

"Kate! Kate!" I yelled.

Ahmed quickly took the gun before it fell to the floor, or went off in some other direction. "Steady, friend," he said.

"Kate." It was all I could think of to say.

The last thing I expected was an answer, but, following a remote source tone, we heard, "Still here, for now. I let her go, Hart. That Red Army stuff—I made it up. Not true, at least I don't think so."

I didn't get it. "Kate? What's wrong? Are you injured?"

"We'll be there in twenty minutes," Ahmed said. "*Sir Edmund,* get the rendezvous routine going."

"No! Ahmed, Hart. I'm staying here."

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"What?"

"Hart, listen. Ayun's innocent. I made up all that stuff about her and the Red Army. *I* killed Sam Wu. You love-sick idiot, *I* did it! When it came down to it, though, I couldn't kill someone else to cover it."

"What!?"

"Prepare for thrust," the *Halley* said.

Ahmed spoke some rapid Arabic. I've never seen a face so bleak on a man, unless it was Sam Wu's, slumping in that chair. "Allah help us. I didn't know."

"No, Hart," Kate said, "Ahmed didn't know. I took him along like all of you. I had the software ready six months ago, just in case. I really tried to get Sam to approve the trip, but he just *wouldn't*. I knew Mathilda would, and I knew I wasn't going to take no for an answer. So I did it, premeditated, deliberate, and ruthless, I did it. Once in a lifetime, something comes along to die for, and this was it. Too bad someone else had to die too, but I knew the consequences."

"Kate . . ." I thought desperately. "Kate, it's too high a price. It's not so clear-cut. There are extenuating circumstances; Sam was . . ." I stopped, remembering at the last minute that Chun-Hee was less than a meter away. "He didn't . . ."

"Yeah, Linda told me. Hart, Sam didn't deserve to die for that." She sighed. "Maybe I don't deserve to die, either. I'll have to leave that to history. But I painted myself into a kind of moral corner here, and there's a price to pay. It's what has to be. Higher law, Hart."

"Kate, no. You *don't* have to die! And it won't make anything right!"

"But, Hart, I couldn't stay locked inside the rest of my life. Look, I've done what I wanted to. It's wild here, big glowing gas geysers shooting off, ice and sand floating around twinkling like fairy dust. Maybe someone will find me here a hundred thousand years from now, out in the Oort. No regrets, Hart. I achieved my life's goal—everything else would be downhill anyway."

"Kate, a good lawyer could wiggle something, maybe an insanity plea, maybe public service outside, maybe, well *anything*. You can't just give up!"

"Hart, dear. No. They say self destruction is the ultimate thrill, so I'm gonna die happy here and now. Happiest death you'll ever see, so don't cry for me, celebrate!" But I heard tears in her voice.

"Kate, you're crazy . . ."

"Yeah, I sure am. Hart, save it for Linda. You're all hers now. All obsessions have to end some time. Sam's ended rich and mine is going to end fulfilled—with this comet. I'm dumping my air now. Balance the books for Sam—pay the price—have that ultimate thrill. Take *that*, universe! I . . ."

As the air lost its ability to carry sound, her voice faded. Forever.

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Memories rushed through me. The vacuum tent at Hadley Rill, the look of surprise and delight, the open arms. I remembered Linda's scream as we made love for the last time. I remembered Sam Wu's corpse, sitting slumped in his chair.

It was Ayun Nu, of all people, who reached me first, and silently guided my head to her slight, stoic shoulder.

All obsessions have to end, I told myself. Either by satiation, or by extinction, or by the death of the obsessed. I hoped time would help me.

We returned as heroes in public, Ahmed in particular. His ship and its new propulsion system meant a new, limitless frontier, even as the Moon was filling up. They've canceled all orders for nuclear-electric liners. The next generation of interplanetary ships will be beam-driven. Ahmed Fhasi may run for the Cislunar Republic Presidency.

Linda wasn't there when I got back—and my faint hopes faded. She left a message—less dramatic than her departure—that said I'd realize it was for the best, someday, and then we could be friends . . . but until then it would be best if we stayed away from each other. And hadn't she put on a good farewell show? Thanks for not being an idiot.

I'd thought I was above this pairing instinct until then. But the finality was like a kick in the gut. I read in the paper that she's going to marry a golfer, over on Nearside.

Ayun Nu hasn't been assassinated by the Golden Path yet; she's going to Coriolis University—an astronomy student. Whatever need had taken her to the Golden Path was apparently equally satisfied by her view of the stars and Comet Angel—the real infinite, she called it, as opposed to the pretend one.

Kate? The story of her, Sam Wu, and the comet will pass, I think, beyond moral judgment and into legend—perhaps into myth. Myths have to start somewhere, don't they? And most of them aren't really nice, except by some higher law. I will miss her, perhaps more, in time, than I miss Linda.

I was looking for an escape, and I had a message from Saturn, from Hyperion of all places. It seems they need an investigator out there. A murder one-and-a-half billion kilometers or so away. I took a leave of absence and the job; it was time for me to put some distance between me and those memories.

So I'm on my way out—floating off L2 Station in one of the last ion rockets that will ever make the trip to Saturn. I look down at the Moon, and think that, like me, it has too many pits, too many craters, too many scars on its skin. But what poor, pale things we both would be, I tell myself, without those scars. ●

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NEXT ISSUE

FEBRUARY COVER STORY

Multiple Hugo and Nebula Award-winner **Robert Silverberg** returns next issue, wearing his fiction-writing hat this time, to deliver our February cover story, a wild, headlong, wide-screen, Technicolor adventure (which is also an affectionate hommage to the late Roger Zelazny) entitled "Call Me Titan," in which one of the oldest and most formidable creatures of Greek mythology, imprisoned for thousands of years, breaks free at last and slams with *tremendous impact into the modern world, looking for* revenge—and finding more than even he bargained for. Don't miss this fast-paced and gorgeously colored romp, by *one of the true giants of modern SF!*

BIG-NAME WRITERS

Mary Rosenblum, one of our most popular authors, joins forces with new writer **James Sarafin,** making an impressive *Asimov's* debut, to bring us a vivid and compelling courtroom drama, proving that even in the Draconian, unforgiving, high-tech jurisprudence system of the future, what a beleaguered defendant fighting for his survival most needs is "One Good Juror"; new writer **James Alan Gardner,** making a brilliant and unsettling *Asimov's* debut, conducts us to an Alternate Reality where history has taken a disquietingly plausible twist, and gives us front-row seats for "Three Hearings on the Existence of Snakes in the Human Bloodstream"; the wildly inventive **Phillip C. Jennings** returns to take us on a fast and furious chase through the outer regions of the Solar System, in the ingenious political thriller "The *Runaways"; and small-press veteran* **Uncle River,** making a poignant *Asimov's* debut, takes us to a remote rural community on the distant outskirts of a social cataclysm to *witness how "Passing the Torch" has suddenly become a* very real and very urgent concern.

EXCITING FEATURES

Robert Silverberg's "Reflections" column offers us some intriguing "Coming Attractions"; plus **Peter Heck** with "On Books," and an array of cartoons, poems, letters, and other features.

Look for our exciting February issue on sale on your newsstand on December 17, 1996, or subscribe today and be sure to miss none of the great stories that we have coming up for you in 1997!

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ON BOOKS

Paul Di Filippo

Stranger Than Fiction

The most gripping steampunk novel of 1996 might very well be a meticulously documented non-fiction work by a writer too little known in the SF world. In his new book, *Blood and Volts* (Autonomedia, trade paper, $12.00, 185 pages) Thom Metzger—who with Richard Scott wrote the transgressive "horror" novel *Big Gurl* (1989), and whose eclectic zine, *The Moorish Science Monitor*, offers Illuminati-style revelations—has applied his keen eye and iconoclastic imagination to recounting, of all things, the history of the electric chair. Melding a novelist's skill for character delineation with a non-dogmatic, journalistic approach, Metzger brilliantly explores the twisted nexus of Victorian technology and culture that spawned the "humane" punishment of electrocution. Whether he's profiling the chair's first human victim—a forgotten murderous soul named William Kemmler—or explaining the physiology of death by current ("the body is a makeshift component, an organic resistor whose rating in ohms can only be approximately determined"), Metzger manages to keep both the objective facts and their mythic resonances in harmonious balance. Like Greil Marcus's *Lipstick Traces* (1989), this book is a bold charting of subterranean social currents that continue to flow right down to our own day.

It's a segue made in heaven to jump from Metzger's book to Mark Dery's newest, which functions rather as a thematic sequel, tracing the nascent Victorian fascination with the "rhetoric of the technological sublime" down to its more outrageous postmodern exfoliations as a kind of "techno-eschatology." *Escape Velocity* (Grove Press, hardcover, $23.00, 376 pages) bears the subtitle *Cyberculture at the End of the Century* and is an SF-informed descent into the current digital maelstrom. Cautiously sipping from the information-age firehose, Dery dissects and spectroanalyzes the worldviews of everyone from Modern Primitives to Extropians, from the wrecking crews at Survival Research Labs to the gnomes at *Mondo 2000*, and offers up his own insights on the cryptic subconscious forces at work and play in our landscape, manifested most grippingly in the cyberdesire to escape our "meat" bodies.

Leery of the "silicon snake oil" proffered as salvation, salting his innate respect for explorers of the future with a healthy dose of humanist skepticism, Dery cuts

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through the "conceptual knots" that have thwarted many other critics with lucid language that includes such brilliant coinages as "cyberbole" and "nerdvana." Like Michael Palin circling the globe from north to south, Dery gains unique perspectives by his unconventional latitude-crossings.

SF readers and writers are a notoriously ornery, individualistic, and opinionated lot. Eccentrics, one might be tempted to call them, a subset of the larger class of oddballs, weirdoes, kooks, and freaks (all terms, by the way, which have at one time or another been adopted as badges of pride by various outcasts). How does a person develop along such lines, coming to possess a creative contrarian streak a mile wide? Such was the question posed by Dr. David Weeks, a clinical neuropsychologist who was astounded to find that no book-length study of eccentrics had ever appeared. To remedy this, he conducted his own years-long investigation, including both historical research and solicited interviews with contemporary off-center individuals. With the assistance of journalist Jamie James, he now presents the results in a fascinating volume titled simply *Eccentrics* (Phoenix, £6.99, trade, 198 pages).

Herein, you'll be astonished by lively anecdotes non-condescendingly recounted about cave-dwellers and mad inventors, obsessive collectors (7500 garden gnomes!) and self-flagellating classical composers, interspersed with statistics and hard data. Weeks's figures reveal that eccentrics are happier, healthier, and more intelligent than their run-of-the-mill compatriots. His insights into their typically atypical childhoods will ring familiar to many readers. (Isaac Asimov himself is cited as representative of the self-directed prodigy, for instance.) Only the section on religious eccentrics seemed lacking to me, omitting as it did the more bizarre Christian saints and the paradoxical behavior of certain well-known Zen masters.

Surely this book will foster a better understanding among the mass of naked apes about the green monkeys in their midst. As for bolstering the self-confidence of the subjects themselves—well, as you'll see when you read *Eccentrics,* they hardly need it!

Any tolerance the average person develops for eccentrics after reading the mild-mannered Weeks book might very well evaporate in an eyeblink after perusing the nastier *Amok Journal* (Amok Books, trade paper, $19.95, 474 pages). Issued by the California mail-order firm specializing, like RE/Search and Loompanics, in fringe culture, this compendium of bizarre folks who pursue a "neurological basis for mystical and ecstatic experience" features very disturbing deviations from the norm. People who bore holes into their skulls or otherwise mutilate themselves consort with more accessible figures such as Italian cinema rebel Gualtiero Jacopetti and the postmodern art-rockers Laibach. Mix-

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ing clinical reprints with original material, this book features illustrations not for the queasy of stomach. Its unnerving pages extend the range of human activity into baffling alien realms that remain paradoxically all too human.

Eleven Publishers in Search of an Audience

On the theory that a liberal dollop of reviewer enthusiasm can compensate for a dearth of column inches, allow me to swivel the spotlight quickly from one fine small press title to another.

1996 saw the publication of three volumes that portend a boomlet in near-future satirical SF. *Infinite Jest,* by David Foster Wallace; *CivilWarLand in Bad Decline,* by George Saunders; and our current focus, Lance Olsen's *Time Famine* (Permeable Press, $12.95, trade paper, 324 pages). Call these authors and their work postmodern Ron Goulart or angel-dusted Harry Harrison or Pohl & Kornbluth on crack. They all offer relentless, savage, hysterically funny attacks on our fin-de-siècle neuroses and suicidal foibles.

Olsen's novel—fully the equal of its two more publicized cousins—follows a large cast of characters adrift in a crumbling America, with an emphasis on the plight of two: Krystal Silikon and Ulysses Sysop-of-the-Plains Stray. (Olsen's characters are nothing if not colorful, in both name and manner.) Living in a trashed, mutagenic ecology, subject to radiation spills, murderous gangs, rabid media overkill, and dozens of new addictions and lifestyle challenges, Olsen's future citizens mostly maintain a "keep on truckin'" sangfroid that mitigates the ghastly events around them. (Olsen includes a wrenchingly realistic account of the infamous Donner Party disaster as a thematic riff—justified plotwise by the disease alluded to in the title, a kind of psychic chrono-displacement—and it's telling that the fate of the Donner misfortunates actually comes off looking *pleasant,* in the main context.)

With his amped-up language and massive powers of invention, Olsen succeeds in tattooing his future on your hide.

Ward Moore was an underrated SF writer of immense subtlety. You owe it to yourself to sample his work, and now publisher Jacob Weisman has made it easy for you. *Lot & Lot's Daughter* (Tachyon Publications, trade paper, $10.00, 72 pages) reprints two of Moore's most famous stories in a handsome edition with a new intro by Michael Swanwick. These two stories form part of the foundation for postapocalyptic works as diverse as recent William Barton, Terry Bisson, and John Barnes, and remain a model of elegance.

Also from Tachyon comes the long-lost expansion of an enduring, endearing novel from the thirties, Stanley Weinbaum's *The Black Flame* (hardcover, $26.00, 202 pages). One of my primo reading experiences as a young teen, *The Black Flame* today thrills me somewhat less, but inspires a

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greater affection, as I marvel at the sight of Weinbaum heroically hewing modern SF out of a lump of granite, using primitive tools and raw power. Sam Moskowitz's intro is a just-the-facts-ma'am narrative of the struggles endured by Weinbaum to sell this book, which still manages to invoke an artist's despair.

Like Circlet Press, Obelesk Books specializes in erotic SF and fantasy, although not to the exclusion of other topics. Three recent titles offer a good sample of their catalog. Two anthologies, both edited by Gary Bowen, are *Worthy Foes* (chapbook, $6.00, 37 pages), which focuses without pity on "differently abled heroes," and *Icarus and Angels* (chapbook, $6.00, 47 pages). The gay-oriented second title concentrates on winged beings and their allure. The writing in both volumes flows nicely and engaging stories are dramatically told. Bowen's own haunting prose may be tasted in *Winter of the Soul* (chapbook, $5.00, 31 pages), three stories of his that examine vampirism in subtle ways.

If Don Webb were magically transformed into a painting (just the kind of bizarre thought he himself might have—and write a story about), the resulting canvas would probably resemble an unholy melange of Norman Rockwell, Henri Roússeau, Dalí, Francis Bacon, and H. R. Giger. At least so one suspects, based on Webb's eclectic, gleefully gonzo fictions. The latest collection of such is *A Spell for the Fulfillment of Desire* (FC2, paper, $7.95, 147 pages), and is guaranteed to have more astonishments per page than your average issue of the *Congressional Record*. Whether experimenting with narrative form itself ("Adipose Abecedarium" and "Nine Games You Can Play") or telling a seemingly mimetic story that abruptly veers off the rails of sanity ("The Fox Hunt" and "The Two Lights"), Webb manages to strip away our comforting delusions of normality and rub our noses in the underlying cosmic chaos. And the amazing thing is, he makes us relish the unease!

Thunder Mountain (Mother Bird Books, trade, $11.00, 187 pages), a novel by SF's own Gandalf figure, Uncle River, is a magical-realist fantasy calculated to evoke the works of Tom Robbins, R. A. Lafferty, and Richard Brautigan. Set in the mythically gritty and lushly beautiful town of Elk Stuck, New Mexico, the book details the miraculous and ordinary events experienced by wanderer Harry Upton after he stumbles into the town and quickly finds himself adopted by its quirky inhabitants. Watched over by the objectively recognized presence of an ancient Indian earth spirit, charming ne'er-do-well Harry finds love in the person of weaver Meridell Devore and wisdom in the spritely, hard-toking mountain-man Brownie. When a mysterious corporation seemingly allied with covert forces in the U.S. government descends on the town in an illegal rape of wilderness lands, the often-bickering in-

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habitants rally together against it, and the book begins to explore some of the same territory visited by Thomas Pynchon in *Vineland* (1990) and Michael Bishop in *Unicorn Mountain* (1988). Like poet-shaman Gary Snyder, Uncle River transcends mere authorship to become an authentic voice of the abused land.

Under the light of a fungal green moon, on the banks of the river Moth, the ancient and fecund city of Ambergris sits like a respected dowager whose secret nightly ritual is a bath in the blood of virgins. You will be permitted to wander the mazy streets of this haunted city with fantasist Jeff VanderMeer as your guide, should you be so lucky as to pick up his short novel, *Dradin, in Love* (Buzzcity Press, trade, $9.95, 98 pages). Assimilating and transcending such honorable influences as Clark Ashton Smith, Jack Vance, and E. R. Eddison, VanderMeer strides shoulder to shoulder with currently working authors such as Paul Park, M. John Harrison, and Thomas Ligotti. Following the lovestruck missionary Dradin on his quest to win the hand of a nameless woman glimpsed once from afar, VanderMeer's book is a leisurely evocation of a hypertactile Never-neverland. The languid pacing of its first three-quarters perfectly conceals from the reader the implicit chaos of its thrilling closing passages.

Is it possible for a reviewer to cheat a little, by simply pointing back to a prior review and saying it goes double for the current book? If so, I would direct the reader's attention to all the good things I said some months ago about the first volume in the series of collected Sturgeon short stories, and affirm that Volume Two, *Microcosmic God* (North Atlantic Books, hardcover, $25.00, 372 pages) duplicates that success. Here we see Sturgeon mostly in a Thorne-Smith mode, using his increasingly sharp skills to turn out fantasy ("Cargo," "Shottle Bop"), SF (the title story, "Artnan Process"), or mimetic fiction ("Two Sidecars," "The Jumper"), all with a certain brightly reflective sheen. It is perhaps not surprising in retrospect that his deeper works lay on the far side of a three-year writer's block following these stories. Paul Williams's empathetic notes expertly continue the mini-bio begun in the first volume. Another important archaeo-literary stratum delicately excavated with care and attention.

World literature in translation offers many treats for the SF reader who strikes slightly off the beaten path. Two such await us here.

The Sign of Jonah (Permanent Press, hardcover, $22.00, 203 pages) by Boeli van Leeuwen. Van Leeuwen is one of the Caribbean's premier novelists, yet this is his first book available in English (translated with verve by Andre Lefevere). We can only hope for more.

Jonah begins with a rambling first-person memoir-cum-rant that gets us acquainted with an

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unnamed author-surrogate (call him "Papito," as do the amiable whores he likes to visit). Like a less grumpy Mr. Sammler, Papito finds much to despise in the modern world, but also much to love. Plagued by apocalyptic visions, he seems to be at the nadir of a long life.

Part II puts us in the skin of one Juan Carlos Altamarino, wealthy playboy and drug despot, a villain with a surprising reserve of integrity. When the narrative returns to Papito, we find his fate twined with Juan Carlos's. Journeying to the mythical land of Balboa with Juan Carlos and his dangerous wife Laila—who might be Lilith incarnate—Papito undergoes mythic trials that culminate in his gritty regeneration at an impromptu street festival.

With an epigram from Philip K. Dick, *Jonah* mixes Lem-like satire and Latin American magical realism into a heady tropical punch that goes down smooth as dark rum.

Greek author Vassilis Vassilikos will probably always be best known as the author of *Z* (1966), basis of the movie of the same name, although he has 120 other books to his credit. The first to reach English in a shocking 30 years (translated by Mary Kitroeff) is . . . *and dreams are dreams* (Seven Stories Press, hardcover, $18.95, 261 pages). A grouping of loosely linked fantastic stories, this book takes the reader on a tour of a mystical Greece, both pre-national and modern, a land where a Shardik-style white bear wanders through Athens, where a newspaper that publishes only accounts of the dreams of the average citizen brings government to its knees, and where the fecundity of a passionate woman expresses itself in an orgasmic flood of twenty-dollar bills. Like Italo Calvino, Vassilikos is simultaneously urbane and earthy, contemporary and ancient, gleeful and melancholy. He succeeds eminently in his esthetic goal of rendering life a dream, and dreams into life.

Two novellas form the volume *Vincent's Revenge* (Baillie Caymar Publishing, trade, $8.00, 216 pages), by Gordon Robert Marlow, and two more differently colored horses have seldom been yoked together. The first, "Vincent's Revenge," is a sober, heartfelt meditation on fame, art, and social justice. Photographer-filmmaker Christoph Sonnwend develops a fixation on van Gogh and, after a visit to his grave, becomes literally possessed by the spirit of the dead artist. In an act of creative revenge, Christoph-Vincent proceeds to magically tamper with several famous van Gogh canvases—and create one new one—all to the deserved disquietude of critics and art patrons. A neat fable that bites like a palette knife in the heart.

Paired with this is "Laissez-Faire Next Ten Miles," a hyperkinetic pinwheel in the classic Sheckley manner, following the exploits of professional Lifespan Adjuster Kniva Helden in a ruthless future society. Juxtaposed with

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"Vincent's Revenge," this story induces both mental whiplash and admiration for Marlow's range.

Anyone who enjoyed Patricia Anthony's *Brother Termite* (1993) will want to pick up Jacques Vallee's *Fastwalker* (Frog, Ltd., trade, $14.95, 220 pages). Vallee, of course, is the UFO expert whose life was integrated into *Close Encounters* (1977), and so he knows whereof he writes. Based on his 1986 French novel, *Alintel,* with additional text by Tracy Tormé, *Fastwalker* is a paranoid's dream, an enigma wrapped in a black budget cloaked in a mindgame. Are aliens real? Does the US possess a captured UFO? Are the renegade tipsters really double-agents? Lives and the international balance of power depend on answering these questions correctly, discover reporter Peter Keller and abductee Rachel Rand. As they follow the (planted) clues to the ultimate revelation, Vallee addresses nearly every possible aspect of the UFO phenomenon, coming up with answers that, far from soothing, make every shadow menacing.

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In Human Country

Flat on my back in a hospital bed with pneumonia, aged seventeen, I had nothing to do but read. In two or three hallucinatory days, I recall, I devoured E. R. Eddison's Zimiamvian trilogy, inhabiting for a time not a mundane sick ward but a glittering court of alien sensibilities and high language, of intrigue and war, where pleasantries could be razor-sharp and lovers and enemies were frequently indistinguishable.

Recently—even without the aid of antibiotics—I got some of the same buzz from the first two novels by newcomer Felicity Savage. While issued as humble mass market originals—the first early in 1995, the second a year later—they are too fine an accomplishment to be overlooked in the welter of copycat titles, and I strongly suggest you track them down.

Humility Garden (Roc, $4.99, 352 pages) derives its title not from a place but from its protagonist. In the salty, sensual world created by author Savage (whose own name, though hers from birth, seems part and parcel of her subcreation), most of the characters bear Puri-

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tan-sounding names such as Enlightenment and Serenity, Regretfulness and Charity, all familiarly shortened by their compatriots throughout most of the narrative, which also makes for ease of reading. But although their names might suggest some kind of Shaker simplicity and piety, the opposite is true. The world Savage paints in great detail is decadent and multiplex, layered with centuries' worth of tradition, custom, and culture.

On a nameless planet, several smallish continents clustered near the equator are host to two intelligent races. The *auchresh* are long-lived, sometimes winged beings with the power of self-teleportation. For millennia they have ruled, seen as literal gods by the most pious of the *hymannim,* the second race of furred, short-lived humanoids. But as *Humility Garden* opens, change is in the air. Atheism has begun to bloom, and the reigning Divinarch, on the point of dying, seems intent on undermining his own race's position of power.

This setup is the masterstroke that makes Savage's books so intriguing and such a cut above most fantasy. Whereas many uninspired novelists are so enamored of their imaginary worlds, so intent on sequels and stasis that they produce plots that only pretend that dire consequences await, Savage is fully bent on examining the winds of change. No sooner does she amply flesh out her fascinating world than she starts destroying it!

Leaving the small village of her birth with mixed feelings, partly under duress, Humility travels to Delta City where a high fate awaits her. Like Dick Whittington come to London, Humilty moves quickly up the social ladder, employing Lady Macbeth-like talents for art and murder to consolidate her foothold on each new rung. Eventually she falls in love with a tabooed partner—Arity, *auchresh* Heir to the Divinarch. As Savage's fable of interspecies sex takes on elements of the Beauty and the Beast myth, Humility's grip on the reins of power become uncertain, and she experiences a fall as dramatic as her rise.

Savage's writing and her angle of attack remind me of early Delany, circa *The Jewels of Aptor* (1962), as well as Tanith Lee. Toss in flavors of Paul Park and Storm Constantine, an eye for sensory detail and tricky plotting, and you approach a unique and mature voice.

Delta City (Roc, $5.99, 383 pages) picks up all the threads from the final chapter of the first book, although three textual years have passed, making in effect one long novel of the two volumes. Hardly any new characters are introduced (the major one, Gete, a fisherman's son, plays a small albeit emotional role), as Savage concentrates on detailing everyone's fallen fortunes under a new *auchresh* dictatorship—particularly the Romeo and Juliet tribulations of Arity and Humility. With much of the narrative being devoted to power struggles and the war that eventually re-

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sults, *Delta City* offers less of the exquisite social maneuverings that captivated me in its predecessor. Yet in its portrayal of how thinking beings and society evolve under stress, how individuals rise—or fail—to meet the demands of hard times, *Delta City* offers its own unique rewards. Originally to be titled *In Human Country*, this second book confirms that Felicity Savage is a trustworthy and entertaining guide to that land of emotional relationships where, in the words of singer Bjork, "a compass wouldn't help at all."

Adventures in Sumeria and Versailles

What models are available to inspire the modern writer of fantasy, other than Tolkien and his tradition? Actually, quite a few, if one only casts about creatively. Felicity Savage opts for Eddison. Mervyn Peake offers a model followed by a few, notably Michael Moorcock with his *Gloriana* (1978). And Edgar Rice Burroughs remains a vivid template.

Talented newcomer Sarah Ash (not to be confused with her fellow Ashes, Constance and Pauline), seems to me to be harkening back to a certain French tradition. Her first novel (1995), *Moths to a Flame* (Millennium, paper, £4.99, 296 pages), reminds me of nothing so much as Flaubert's gorgeous treasure-chest of Orientalism, *Salammbo* (1862), while her newest, *Songspinners* (Millennium, hardcover, £16.99, 325 pages), is a romance worthy of Dumas.

Moths is set in a kind of sensuous, passionate Bronze Age very reminiscent of Flaubert's Carthage, where despotic priest-kings preside over gladiatorial slaughters, and the air is always heavy with burning incense and scented body oils. Although it starts off somewhat slowly and misleadingly like a Norton juvenile—with the abduction by slavers of the pious young brother and sister twins, Lai and Laili—the book soon becomes a tough-minded tragedy of Biblical proportions. While Ash creates memorable characters caught up in thrilling events, her protagonists are distinctly non-modern in their motives and reactions, like dynastic Egyptians or characters frozen in an Assyrian frieze. The ultimate result is a bit like reading a fluid and captivating undiscovered epic of Gilgamesh's period.

In *Songspinners* (subtle textual clues seem to indicate that this universe is linked to that of *Moths*), Ash jumps forward to a setting analogous to our own seventeenth century, and tells a tale full of Three Musketeers brio. Our cast consists of a flamboyant castrato singer, an opera composer who's a cross between Mozart and Beethoven, a scheming Countess assassin, a soldier-monk torn between love and duty, and, above all, Orial, young singer and mystic seeking to learn her true destiny. As with Caroline Stevermer's *A College of Magics* (1994), the fantasy element here is paradoxically integral, yet almost disposable, so strong is the basic human plot.

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Wielding sentence fragments and dreams effectively, Ash draws the reader fully into the hurly-burly surrounding her large, expertly juggled assortment of larger-than-life schemers and strivers.

With her first two novels, Ash has proven herself an innovative fantasist not content to trade in shopworn kingdoms or conceits.

I Hear America Scrying

Piece by piece, certain ambitious and talented contemporary fantasists are colonizing the modern North American landscape, turning our present and recent past into the stuff of effervescent myth. In a country still so young that it lacks the accreted folkloric texture of older lands, these writers are layering on a patina of magic that transforms the rough elements of our national history into a tapestry of fable and adventure, while still retaining the nitty-gritty feel of American life as she is lived.

At the head of the parade, of course, is John Crowley, with the so-far unsurpassed *Little, Big* (1981), *Aegypt* (1987), and *Love & Sleep* (1994). Close behind come Tim Powers and James Blaylock, Liz Hand and Richard Grant, Charles deLint and Peter Beagle, as well as a host of intriguing mainstream authors such as Paul Auster. Even Thomas Disch, in books such as *The Businessman* (1984) and *The MD* (1991), can be profitably herded into this magical-realistic corral.

And although her last two books have deserted America for more exotic venues, Lisa Goldstein is certainly a card-carrying member of this coven, as is fully proven by her newest work, *Walking the Labyrinth* (Tor, hardcover, $21.95, 254 pages).

From its exuberant Marx Brothers prologue (picture their famous ocean-liner stateroom scene) to its confrontational yet healing ending, Goldstein's novel faultlessly conjures up the magic past of America—specifically, a golden age of live vaudeville stage performances—and how the events of that past era reverberate down to the present.

Our protagonist is the highly competent yet slightly confused Molly Travers (her last name, in line with the book's labyrinth motif, can justifiably be read as "traverse"), unwitting scion of one very odd family, the Allalies. Although much of the Allalie family backstory occurs in England, as does some of the present-day action, the main readerly interest is Molly's very American childhood and adult life, as well as the saga of the Allalies upon their emigration to the U.S. Riding mostly Molly's shoulders (a few jumps in POV, although useful, were the one distracting element in the book), we get to play detective as she unravels the mystery of her heritage. A humorous Nick and Nora Charles riff is sustained with her reluctant partner, P.I. John Stow, and their potentially romantic by-play is both a foreshadowing and a red herring of their destiny. How's that for a good writerly illusion!

Illusion, of course, as is fitting in

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a book about the nature of magic, is one of Goldstein's main concerns. She reaches some remarkable new levels of insight in fathoming illusion's role in life, summarized in the statement by one of the Victorian Allalies, Henry: "Lies and truth. And illusion, which can be used in the service of either."

The other main issue in Goldstein's story is power, its use and abuse. Of course, the power here is literal magic. But when Molly's Aunt Fentrice warns Molly at book's end, "We can do anything we like. The only limits are our own desires," it's not hard to draw a lesson that applies to modern technologized mankind and our greedy, life-despoiling tendencies. Goldstein is bold enough to offer a solution, embodied in Corrig Allalie, who uses his power "in the service of nothing at all," save perhaps astonishment, education and beauty.

Like the Allalie stage miracle in which a living lake sprinkled with the reflection of stars is picked up and donned as a cape, *Walking the Labyrinth* shows Lisa Goldstein clad in a thaumaturge's mantle.

Marooned

I had never read the work of Cherry Wilder before—my deep misfortune, I soon learned. Hearing that her new book, *Signs of Life* (Tor, hardcover, $23.95, 350 pages) was a sequel to an earlier work, *Second Nature* (1982), I immediately seized the opportunity to read both. And while I have to report in all honesty that the new book is somewhat less pleasing to me than the exceptional earlier one, I'm still glad I introduced myself to this fine writer.

Second Nature I found to be an exotic amalgam of Jack Vance and James Tiptree, Jr., a mix of deep anthropological detail and emotional mindgames. On the planet Rhomary, castaway humans have established over two centuries a charming, eminently believable society, constrained by a planetary lack of metals and by native lifeforms and topography. Into this stable milieu Wilder interjects several variables: a second human crash-landing, of the interstellar ship *Serendip Dana*; the disappearance of the Vail, giant intelligent Rhomary natives who served as mentors to humanity; and finally, three energy beings who playfully and irresponsibly meddle in human affairs. With subtle and economical prose, full of sensual poetry, Wilder filled a whole world with engaging characters whose affairs really mattered. The overall effect reminded me of Vernor Vinge's equally satisfying *Grimm's World* (1969).

The ending of *Second Nature*—when the Vail have been rediscovered and three hi-tech survivors have linked up with the lo-tech "natives"—prepped me for a sequel in which the culture of Rhomary would undergo certain transformations and enlargements. I fully expected the focus to remain on the unique Rhomarians. But Wilder delivers something different, and lesser, in *Signs of Life*. Backtracking in her internal chronology, she

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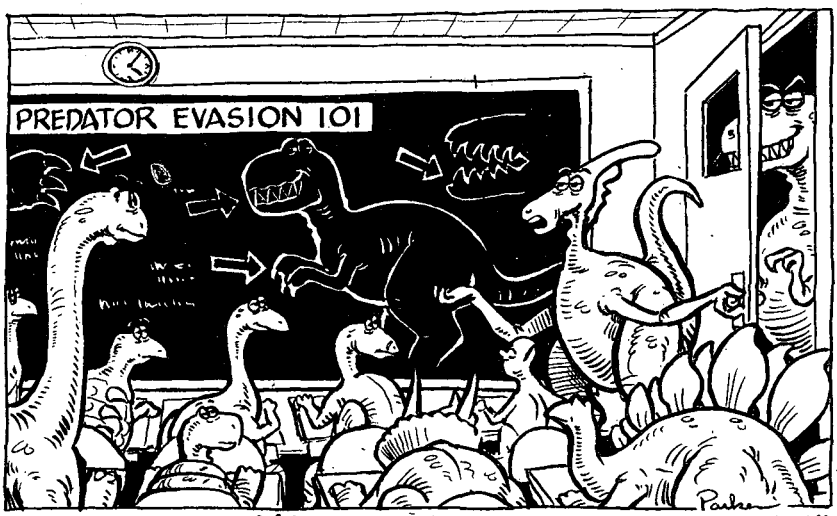
replays the crash of the spaceship *Serendip Dana,* but this time from the POV of the hi-tech spacers, more of whom have survived than we suspected. Sadly, these new survivors and their culture are far less interesting than the mostly offstage Rhomarians, and the book becomes a Robinsonade of mild interest, spiced with some First Contact problems.

The most interesting thing about the stranded crewmembers is their language. Introduced in the first book, the inventive futuristic jargon spoken by the spacers contrasts nicely with the more old-fashioned diction of the Rhomarians. But the political headtrips the spacers obsessionally engage in begin to grow stale even in the heightened language. This time around, I was reminded of no book so much as Tiptree's flawed *Brightness Falls from the Air* (1985), which featured a similar mix of aliens, human visitors and human "natives," right down to identical troupes of interstellar entertainers in both books.

The unfortunate misstep here, I believe, which makes *Signs of Life* ultimately anticlimactic, was for Wilder to try to return to events that had already been satisfactorily played out. Poul Anderson tried a similar thing in *The Stars Are Also Fire* (1994), which revisited the scene that was fully explicated in *Harvest of Stars* (1993). As with latter-day Elric of Melniboné, who continues his adventures ignorant of the Götterdämmerung he has already experienced, the players in *Signs of Life* are living in the past. ●



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ELEVENTH ANNUAL READERS' AWARD

Well, it's the January issue again, the start of another new year, and as our long-time readers know, that means that once again it's time for our Readers' Award poll.

Most of you know the drill. For those of you who are new to this, we should explain a few things.

We consider this to be our yearly chance to hear from you, the readers of the magazine. That's the whole point behind this particular award. What were your favorite stories from *Asimov's Science Fiction* last year? This is your chance to let us know what novella, novelette, short story, poem, cover artist, and interior artist you liked best in 1996. Just take a moment to look over the Index of the stories published in last year's issues of *Asimov's* (pp. 154-156) to refresh your memory, and then list below, in the order of your preference, your three favorites in each category. (In the case of the two art awards, please list the artists themselves in order of preference, rather than the individual covers or interior illustrations—with the poetry award, however, please remember that you are voting for an individual poem, rather than for the collective work of a particular poet that may have appeared in the magazine throughout the year.)

Some further cautions: Only material from 1996-dated issues of *Asimov's* is eligible (no other years, no other magazines, even our sister magazine *Analog*). Each reader gets one vote, and only one vote. If you use a photocopy of the ballot, please be sure to include your name and address; your ballot won't be counted otherwise.

Works must also be categorized on the ballot as they appear in the Index. No matter what category you think a particular story ought to appear in, we consider the Index to be the ultimate authority in this regard, so be sure to check your ballots against the Index if there is any question about which category is the appropriate one for any particular story. In the past, voters have been careless about this, and have listed stories under the wrong categories, and, as a result, ended up wasting their votes. All ballots must be postmarked no later than February 1, 1997, and should be addressed to: **Readers' Award, *Asimov's Science Fiction*, Dell Magazines, 1270 Avenue of the Americas, New York, NY, 10020.**

Remember, you—the readers—will be the only judges for this award. No juries, no panels of experts. You are in charge here, and what you say goes. In the past, some categories have been hotly contended, with victory or defeat riding on only one or two votes, so every vote counts. Don't let it be your vote for your favorite stories that goes uncounted! Don't put it off—vote today!

The winners will be announced in an upcoming issue.

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BEST NOVELLA:

1. _____

2. _____

3. _____

BEST NOVELETTE:

1. _____

2. _____

3 _____

BEST SHORT STORY:

1. _____

2. _____

3. _____

BEST POEM:

1. _____

2 _____

3 _____

BEST COVER ARTIST:

1. _____

2. _____

3. _____

BEST INTERIOR ARTIST:

1 _____

2. _____

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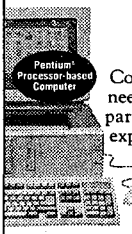

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SF CONVENTIONAL CALENDAR

After Thanksgiving's rush, a big time for eastern Europe. Plan now for social weekends with your favorite SF authors, editors, artists, and fellow fans. For a longer, later list, an explanation of cons, a sample of SF folksongs, and info on clubs and fanzines, send me an SASE (self-addressed, stamped #10 [business] envelope) at 13107B Autumn Wood Way, Fairfax VA 22033. The hot line is (703) 449-1276. If a machine answers (with a list of the week's cons), leave a message and I'll call back on my nickel. When writing cons, send an SASE. For free listings, tell me of your con 6 months out. Look for me at cons behind the Filthy Pierre badge, with a musical keyboard. — Erwin S. Strauss

NOVEMBER 1996

29-Dec. 1—**LosCon.** For info, write: **11513 Burbank Blvd., N. Hollywood CA 91601.** Or phone: **(818) 860-9234** (10AM to 10 PM, not collect). Con will be held in: Burbank CA (if city omitted, same as in address) at the Airport Hilton. Guests will include: Harry Turtledove, V. Di Fate, M.R. (Bob) Null. LA's big traditional con.

29-Dec. 1—**Darkover Council. (202) 737-4609.** Holiday Inn Timonium, Baltimore MD. M. Bradley, Lichtenberg.

29-Dec. 1—**ConCat. (423) 523-6986.** Radisson, Knoxville TN. Nancy Collins, Alan Clark, W. Webb, C.L. Grant.

29-Dec. 1—**SiliCon. (408) 541-0358.** Hilton, Sunnyvale CA. Katherine Kurtz, Scott MacMillan, Frank Cirocco.

29-Dec. 1—**ChambanaCon. (217) 753-8934.** Chancellor, Champaign IL. A. Offutt, W. (Bob) Tucker. Relaxacon.

29-Dec. 1—**Visions. (708) 405-9461.** O'Hare Hyatt, Rosemont (Chicago) IL. British SF/fantasy media.

29-Dec. 1—**DefCon.** Norbeck Castle Hotel, Blackpool, England. "Four major guests." U.S. SF/fantasy media.

29-Dec. 1—**Creation. (818) 409-0960.** New York NY. This & following are commercial media/comics events.

29-Dec. 1—**Fantasy Fair. (214) 350-4305.** Harvey, Dallas TX. Creation & FF do many cons; these are biggest.

30—**ConTex. (713) 526-5625. (E-mail) candacevp@aol.com.** Houston TX. Jamie Murray. No more news, at press.

DECEMBER 1996

4-8—**Poland National Con. (48 58) 531-073 or (081) 242-07.** Gdansk Poland.

6—**St. Nicholas Rumpus. (385-1) 785-207.** Samobor Croatia.

6-8—**DraCon. (+42 05) 754-870.** Hotel Santon, Brno Dam, Czech Republic. Program on space, and on Lovecraft.

6-8—**SMOFCon. (206) 241-0892.** SeaTac Hilton, Seattle WA. Where convention organizers meet to talk shop.

24-26—**YuleCon, 56 York Rd., Torpoint Cornwall PL11 2LG, United Kingdom. (01752) 812-698.** Over long holiday.

27-29—**Event Horizon, Box 1438, Sterling VA 20167. (703) 404-2711.** Washington DC area. Gaming, SF & fantasy.

27-29—**Stellar Occasion, 3352 Broadway Blvd., #470, Garland TX 75043. (214) 278-6850.** Harvey, Dallas TX. Anime.

JANUARY 1997

3-5—**EveCon, 1607 Thomas Rd., Ft. Washington MD 20744. (301) 292-5231.** Holiday Inn FSK Mall, Frederick MD.

3-5—**NecroCon, 6825 Flags Center Dr., Columbus OH 43299. (614) 882-9812.** Harley. Low-key relaxacon.

3-5—**KutiCon, c/o Lenic, 1.6 Kovacica 42, Kutina 44320, Croatia.** Dates estimated; sometime in January.

10-12—**Arisia, 1 Kendall Sq. #322, Cambridge MA 02139.** Boston Park Plaza. Salvatore, Eggleton.

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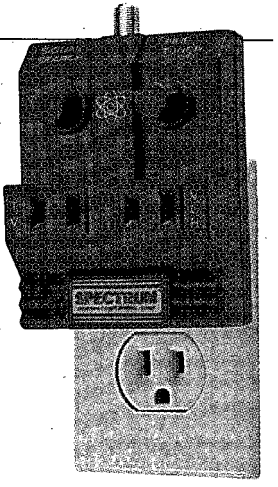
Fifteen years of microelectronic research makes conventional antennas a thing of the past!

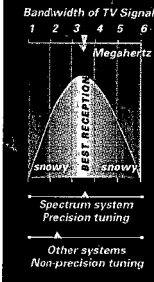
This little box uses your home's electrical wiring to give non-subscribers, cable subscribers and satellite users better TV reception on your local broadcast networks!

by David Evans



Technology corner

1. Why don't conventional antennas work as well as the Spectrum?



■ When TV signals are tuned at the TV channel's center frequency, optimum tuning has been achieved.

■ Other antennas can't offer center frequency tuning like the Spectrum Antenna can. They only offer such tuning up to the edge of the center frequency. As a result your TV picture remains snowy.

2. How does Spectrum use a home's electrical wiring as an antenna?

Believe it or not, the Spectrum Antenna simply "activates" the giant antenna that already exists in your home. Essentially, it uses all of the wiring throughout your home's walls and ceilings to make an antenna as large as your house for unbelievably clear reception of local broadcasting.

3. Spectrum antenna features

Parallel 75 ohm resistance
For minimum loss of signal
Signal search control
For selecting multiple antenna configurations
Polarized three-prong plug for grounding
For optimum signal grounding to eliminate noise and static
Resonant fine tuner control
For dialing in crisp, clear TV/stereo reception, eliminates ghosting
Dual AC outlets with built-in surge protection
For plugging in additional TV/stereo equipment guarding against damage and electrical surges

Until recently, the only convenient way to guarantee great TV reception was to have cable installed or place an antenna on top of your TV. But who wants to pay a monthly cable fee just to get clear reception, or have rabbit-ear antennas that just don't work on all stations? Some people just aren't interested in subscribing to cable. Or they may live in an area where they can't get cable and TV-top antennas aren't powerful enough. And what about those people who have cable or satellite systems but still can't get certain local stations in clearly?

Now, thanks to fifteen years of microelectronics research, a new device has been developed that is so advanced, it actually makes conventional antennas a thing of the past. It's called the Spectrum Universal Antenna/Tuner.

Advanced technology. Just imagine watching TV and seeing a picture so clear that you'd almost swear you were there live. Just plug the Spectrum Antenna into a standard AC outlet and plug your TV into the Spectrum. You can remove the unsightly clutter of traditional TV-top devices gathering more dust than television signals. Get ready for great reception. Your TV will suddenly display a sharp, focused picture thanks to its advanced design "Signal Search" and "Fine Tuner" controls.

Who can use Spectrum?

- ***Cable users-You have cable but you can't get certain local stations in clearly.***
- ***Non-cable users-You don't have cable and want the stations to come in more clearly***
- ***Satellite users-You have a digital satellite system but can't get local stations in clearly***

Uses your home's electrical wiring. The Spectrum Antenna is a highly sophisticated electronic device that connects into a standard wall outlet. The outlet interfaces the Spectrum Antenna with the huge antenna that is your home wiring network. It takes the electrical wiring in your house or apartment and turns it into a multi-tunable, giant TV reception station which will improve your TV's overall tuning capability. The results are incredible. Just think how much power runs through your home's AC wiring system—all that power will be used to receive your local broadcasting signals.

How it works. Broadcast TV signals are sent out from the local broadcast station (ABC, CBS, NBC, etc.). They interface with your home's AC power line system, a huge aerial antenna network of wiring as large as your home itself. When the Spectrum Antenna interfaces with the AC line, the signal is sent to its signal processing circuit. It then processes and separates the signal into 12 of the best antenna configurations. These specially processed signals route themselves into 12 separate circuits. The Spectrum Antenna includes a 12-position rotary tapping switch, the "Signal Switch" control, which gathers twelve of the best antenna configurations.

The "Signal Search" offers varying antenna configurations for the user to select from the best signals of all those being sent. The signal then passes through the Spectrum Antenna's special "Fine Tuner" circuit for producing crisp, clear reception.

Risk-free offer. The Spectrum Universal Antenna/Tuner comes with our exclusive 90-day risk-free home trial and a 90-day manufacturer's warranty. Try it, and if you're not satisfied, return it for a full "No Questions Asked" refund.

Limited time offer! We realize that most people have more than one TV in their home. We are offering a special discount on additional Spectrum Antennas so you get great reception on all your TVs!

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